Statistical Observer

Contents

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Introduction

This is the first issue of the Statistical Observer. It is a publication intended to meet the need for a greater exchange of information primarily of a statistical or statistical research nature among professionals in these and related social science fields in Canada.

The suggestion that there should be such a publication is not a new one, especially as a means of ensuring communication between DBS and its counterparts in the provinces. It was the subject of a resolution at the Federal Provincial Conference on Economic Statistics in May, 1967, and some planning had been done on it earlier in DBS.

Although there is a considerable exchange of information on statistical and research projects now through various professional conferences and otherwise, we expect that a publication specifically for this purpose in Canada will be a further help. It is intended to contribute toward informing economists, statisticians and related professionals throughout Canada about selected statistical and research developments undertaken in DBS, in other Federal departments and agencies, in provincial departments, in universities, and in business and independent research organizations. It is designed as a medium for exchanging information rather than as a vehicle for urging that programs be undertaken or modified.

The Observer will include short descriptions of new projects, or of developments within existing projects rather than attempting to give full details. Readers interested in more complete information will presumably communicate directly with those responsible for the development concerned.

Some of the developments described in this first issue cover a period of several months. In future issues we will try to provide information on a more timely basis. The publication will be issued as frequently as the need indicates, but probably not more than quarterly, at least in the initial period.

Suggested articles for future issues should be sent to W. Pharoah, Information Division, DBS, (Telephone 996-2752). He is also the person to inform of any persons you may want to place on the mailing list. There is no charge for the Statistical Observer.

Because of the problem of getting information for a first issue from all coverage in this one is not as complete as it might be. It is hoped that contributions from those concerned with developments that are of interest will make future issues more representative than has been possible this time.

Feature

Better Timeliness Aim of Current DBS Effort

A determined drive has been mounted by DBS designed to show significant timing improvements in several key aggregative monthly series by the end of the fiscal year 1967-68, with the ultimate objective of improving the timeliness of all DBS series. Leading the drive is a timeliness committee comprised of senior officials of the Bureau under the chairmanship of Dr. S. A. Goldberg, Assistant Dominion Statistician. The aggregative monthly measures to be dealt with initially include the index of industrial production, over 100 commodity series that enter into the index, exports, imports, the monthly employment survey, retail sales, and current shipments, inventories and orders. For these series improved timing targets have been set up to be met by the end of the fiscal year along with longer range targets to be attained in the next 1 to 3 years.

To facilitate the committee's work, a record system is being evolved which will provide uniform information throughout the Bureau from form design through mail out, follow up, manuscript preparation, printing, release, etc. Such a system has been implemented for certain surveys, and is being extended to others.

An indication of the way in which considerable timing gains have already been achieved is best provided by a description of the work on the current monthly manufacturing and mining commodity surveys. For each of 121 monthly surveys, all important ('must') respondents have been identified and those who, in the recent past, had not generally reported soon enough to meet target dates, were contacted by telephone. The importance of the DBS timeliness program as well as their role in it was explained to them and their active co-operation was sought. The general reaction was most favourable and as a consequence, data have been received and published earlier.

The lists of 'must' respondents that have been prepared for these commodity surveys, as well as for other more aggregative series such as the monthly employment survey, are designed to form the basis of early sets of advance estimates for use both in national economic aggregates such as the monthly Index of Industrial Production, and for early release in their own right. Thus, users may note a greater incidence of revisions in such series for the most recent month or months. These will have originated because DBS will compile data based on incomplete response, by estimating or imputing for non-respondents at specified cutoff points. The methodology involved in these early estimates is designed to keep the magnitude of such revisions to a minimum.

The monthly employment survey has also undergone considerable study since the timeliness program began. An entirely new set of specifications for the monthly survey is being developed which involves substantial additional computerization. This updated system is scheduled to be operational by May, 1969.

In the interim, in an attempt to achieve improved timeliness by the end of the present fiscal year, a supplementary program is being developed, so as to exploit to the fullest extent those employment survey returns which have been received by the Bureau at an early date in the reporting cycle. Basically, this involves a paired-sample imputation, whereby monthly movements for non-respondents are estimated by movements shown by early respondents in particular industry cells. This is further supplemented by professional analysis and review. Tests have proved that the results of these early cutoffs are quite satisfactory, given a reasonable degree of coverage. The intention again is both to publish such early aggregations as are warranted by quality considerations, as well as to provide detailed labour input series for use in the current monthly Index of Industrial Production.

In order to improve timeliness while keeping the degree of imputation to an acceptable level, the Labour Division of the Bureau has also undertaken a program to solicit co-operation through direct contact with many of the more important respondents.

In the area of Exports and Imports, a considerable effort is also being made. Firstly, staff is being reorganized along more specialized commodity lines; this has already served to improve timing as well as to achieve better quality coding of customs documents, the source of basic data in these areas. Work is also in progress to develop techniques for sampling of low-value entries. This area of work does not lend itself, of course, to generally used imputation techniques for non-respondents, because of the unique nature of individual commodities traded internationally.

These are merely the highlights of some of the activities taking place in the Bureau to improve timeliness. Although the initial effort has been concentrated on monthly measures, series with different periodicities are not being overlooked. For example, one long range program being developed is aimed at improving the timeliness of series such as the annual Census of Manufactures. Problems in this case are, however, somewhat different since these represent, in a sense, complete and final counts. Nevertheless, the Bureau is now considering an earlier release of some aggregative information, to be followed up later with the complete range of commodity output and input data, etc., normally found in Census publications.

As well, efforts will shortly be made in areas outside what might be termed economic statistics, branching out to cover other fields related to social and financial statistics.

In the overall program, the Dominion Bureau of Statistics is taking every step necessary to speed up its handling and processing of basic data, as well as to exploit to the full such incomplete information as may be available, consistent with statistical quality considerations. It must be realized, however, that to a considerable extent, improvements in timeliness are dependent on the co-operation of respondents. DBS respondents are to be found in the entire range of activities in which Canadians are engaged, from business and research organizations through other Federal Government departments and agencies to provincial government departments. Their co-operation is essential to complete success of the timeliness program, and their suggestions and advice would be most welcome.

New Projects

Integration of Establishment And Company Data Studied

A highly complex project intended to integrate company and establishment data is underway in the DBS. Both the development of the Central List (of respondents to DBS surveys) and in particular the availability of fuller corporate financial data have increased the demand, both inside and outside DBS, for such integration. At present, production inputs and outputs such as sales, inventories, employment; etc., have been collected by the different divisions of the Bureau on an establishment basis. Meantime, financial statement returns have been collected by other divisions of the Bureau principally on a company or enterprise basis. The advantages accruing from integration will affect the accuracy of the reporting system and will yield a clearer perspective.

Essentially the project will examine the feasibility of developing a reporting system for corporations and their establishments which will ensure that, where appropriate, respondents relate or integrate in a consistent fashion, at the reporting stage, statistics which apply to different levels of the same organization, the establishment, the company or the enterprise. The opportunity for developing closer integration of financial and production data is better in Canada than in other countries now that annual and quarterly financial statements data are reported directly to DBS. The annual financial series has become available recently under the terms of the Corporations and Labour Unions Returns Act.

The main task is to render more flexible and efficient the existing system of data flow with the least amount of dislocation in present procedures and to impart a greater degree of coherence so as to obtain information for studies of output, productivity and other inter-related determinants. Further, additional statistical information would become available for the construction of input-output, real output, national accounts and financial accounts series and various types of econometric models.

Small Area Estimates of Population Planned

Experimental work to improve DBS population estimates is proceeding in the Bureau's Regional Statistics Research and Integration Staff. In the past, annual and quarterly estimates of population between census years has been limited to provincial breakdowns and to estimates for metropolitan areas and large cities. Under development is a system to break the annual estimates down to county and census division detail and possibly later to census sub-division detail. For county estimates, attention is centered on two main estimation methods (ratio correlation and component method 11) both of which impute population estimates from other data available for between census years.

At present, census estimates are derived by starting with the count at the last annual census, adding births and estimates of immigration, and subtracting deaths and estimates of emigration.

In addition to widespread use of population estimates by provinces and by business, DBS uses them itself in producing other data. One important DBS use is in estimating the labour force by age group and sex from a monthly sample survey.

Profile Interviews Used For Job Vacancy Survey

Senior statisticians and researchers from DBS got down to the "grass roots" in the closing months of 1967 as they explored problems encountered in measuring current labour demand.

They worked in the field, side by side with new staff hired to operate the Job Vacancy Survey, conducting interviews to obtain organizational profiles to evaluate the quality of reports. Later they compared notes in workshop discussions. Their experiences have led to changes in survey procedures and in the questionnaire used, although the original concept remains unchanged.

This new survey, undertaken by DBS for the Department of Manpower and Immigration, was initiated for large manufacturing firms as a development project in September 1967. It will be extended to include the remainder of manufacturing and other industries during 1968. It is intended eventually to complement the Labour Force Survey which assesses the current labour supply each month. It is not expected that useable information will become available until 1969.

Basically it will be carried out by mail, but profile interviews were initially undertaken to help determine how companies could best report vacancies, and also who, within the company, was the person best qualified to complete the questionnaire.

Following up the mailed questionnaire a large number of interviews will take place. These interviews are an integral part of the survey, designed to gather new information, as well as to provide a basis for determining correction factors for the mail phase.

The workshop experience has revealed that a less structured interview should replace the earlier formal interview questionnaire.

Pilot Manpower Study In Northwest Territories

Last summer, at the request of the Department of Indian Affairs and Northern Development, DBS undertook a test program in the Northwest Territories to determine the feasibility of manpower surveys in that region.

The area covered in the test program was entirely in the MacKenzie District and included the following places: Coppermine, Fort Providence, Fort Resolution, Rocher River, Pine Point, and Hay River.

The test program was conducted with a small staff that moved from Ottawa to Hay River. Local enumerators were hired and trained. The enumeration itself lasted three weeks. Evaluation of the survey is still underway.

Manitoba Royal Commission on Northern Transportation

A Royal Commission on Northern Transportation established by the Government of Manitoba is to inquire into all aspects of transportation related to the economic development of northern Manitoba. Existing and future activities of and requirements for road, rail and water transportation will be examined in detail; consideration will also be given to new modes and techniques in the transportation field. The need for, and means of integrating existing and new transportation modes for the most efficient use of transportation resources will also be covered.

The Royal Commission is headed by Arthur V. Mauro, Q.C. and the Research Staff is directed jointly by Professor S. Trachtenberg and Mr. D.J. Sandell. These men have met with officers in a number of Federal Government departments and agencies to obtain the benefit of Federal Government

xperience in transportation systems and echniques in Canada's North.

Of prime importance to the Commission, vill be certain data compiled by DBS. Ini- ially, the Commission will require DBS lata on the social and economic characteris- ics of northern Manitoba communities and ettlements. As economic planning and de- elopment call for detailed information on abour force, employment and income data, o that end, the Royal Commission plans to egin a socio-economic survey. The methodo- ogy of the survey has not yet been finalized ut steps have been taken to ensure tech- ical advice by DBS personnel.

D.J. SANDELL
Manitoba Royal Commission on Northern Transportation

Census Test: London

A full-scale test of a population census by mail was carried out in September 1967, in London, Ontario. Tabulation of some of the results indicates that a census-by-mail may be workable with advantages that include improved quality and potential savings in costs and time. Other census tests for selected Canadian centers in 1968 are planned to determine if other aspects of a mailed census of urban areas are feasible and economical as part of the 1971 Census of Canada. The London test was the first population census-by-mail to be undertaken in Canada.

The population of London had grown to 201,931 according to the census, an increase of 7,515 since the 1966 Census of Canada. This increase of 3.7 per cent is almost double the national growth rate of 1.9 per cent between 1966 and 1967. London also gained 3,234 occupied households since 1966 for a total of 59,497.

A complete mailing list of London households was compiled in October 1966, in preparation for the test. This list was checked both in May and August 1967 with the assistance of the London Post Office. About 85 per cent of some 60,000 census forms mailed to London households were returned by mail. Of the balance, many were delayed because of individual problems in completing the form, but they were picked up in the traditional door-to-door method by DBS employees hired locally.

Newfoundland

An Economics and Statistics Division has been established in the Department of Finance, Government of Newfoundland and Labrador. The Division is divided into sections providing economics services and statistical services and is responsible for federal-provincial fiscal relations. This new Division will also analyse provincial revenues and expenditures and review trends in the financial markets. Further, the study of economic conditions as they affect fiscal planning and programs will be undertaken by the Economics and Statistics Division.

The prime function of the Statistical Service is to assist the Economics Service in performing the various projects necessary to carry out its research functions. The Statistical Service will advise on forecasting techniques. It will also collect, compile and advise on problems related to the interpretation of statistical information and, where necessary, design questionnaires and samples. It will test the reliability of estimates, suggest appropriate methods of graphic and tabular presentations, and generally advise on any problem of a statistical nature.

The Statistical Service represents the Department of Finance in Federal-Provincial, inter-provincial and inter-departmental discussions aimed at improving statistical information services to government departments. The Service answers inquiries concerning financial statistical information from government departments, industrial groups and interested individuals. It will also prepare an annual statistical review of the province and hopes to publish a monthly chartbook illustrating the current trends of selected economic indicators.

During the formative stages, the Statistical Service has been working closely with various DBS personnel, and, in particular, with the Provincial Liaison and Consultative Services of the Bureau. Consultative Services is providing the expert assistance needed in establishing the Statistical Service and hopes to make available various DBS personnel to assist in solving special problems.

E. POWER
Statistics Branch
Department of Finance

Nova Scotia

Current developments of interest in Nova Scotia relate to work in provincial product

accounting, tourist research, and trade statistics. A number of on-going programs in various provincial departments have made use of relevant DBS data, and some of them involve co-operative arrangements with DBS.

The Dalhousie Institute of Public Affairs in Halifax has been retained to prepare income and product accounts for the Province of Nova Scotia. The work was begun by Dr. Stanislaw Czamanski of Cornell University as part of the ARDA Task Force study of North-Eastern Nova Scotia. The document now being prepared is broader in its conceptual base and more detailed in its treatment of the data. It is anticipated that the study will provide inputs for a provincial econometric model which is also being prepared at this time. As well, it is hoped that the accounts, when completed, will help to delineate problem areas in the economy.

In travel research over the 1967 season, the Nova Scotia Department of Trade and Industry interviewed airplane visitors, based on a probability sample set up by the staff of DBS; tested automobile interview questionnaire designs; continued analysis of previous surveys, and studied the effects of tourism on the government and the economy.

The Department of Trade and Industry in Halifax, plans to issue the first edition of the Nova Scotia Export Quarterly by the end of 1967. The main section of the report will provide commodity statistics of Nova Scotia-produced exports. At present the External Trade Division of DBS provides data based on province of customs clearance, for Nova Scotia and New Brunswick.

R. E. DROVER
Department of Trade and Industry

Quebec

The Quebec Bureau of Statistics is preparing a number of studies on the use of the basic components of the index of business concerns. This index has gone through several important developments lately that will permit the incorporation of administrative data, the improvement of the up-dating methods, the development of a system to go from an administrative index to a statistical one and, finally, the establishment of a central index.

Q.B.S. recently conducted a survey and some statistical work concerning financial institutions and commercial groups doing business in Quebec. Originally, the work was conducted along the lines of a census, and subsequently along the lines of an inventory of the operations of each institution. By the latter method Q.B.S. hopes to be able to readily identify economic indicators reflecting the activities connected with business transactions carried out in Quebec, in relation to such operations as a whole. A further objective of this method is to determine the commitments financial organizations maintain with Quebec residents in relation to their investments. Moreover, these research projects aim to assess the contribution of financial institutions to the Quebec economy. Simultaneously an inquiry into the various economic sectors' role in the provision of funds to finance business and industrial undertakings and financial institutions themselves is to follow. In addition, an examination of the structure of financial undertakings is yet to be undertaken. From the statistical information collected for each group of institutions or commercial groups economic studies larger in scope than those which deal solely with statistics may be feasible.

Q.B.S. now has a very elaborate economic accounting system which will enable the Quebec Government both to analyse and forecast – on the basis of computed data – the major operations of the Province's economy. An econometric model underlying the economic accounting system can now be evolved. The major role of such an econometric pattern is to assess the impact, on the various sectors of the Quebec economy, of the changing exogenous factors affecting it, and of the spontaneous changes which might occur within the Quebec economy. Such an econometric model could be used, for instance, to estimate the probable effects on the Quebec economy of Federal policies in the taxation or monetary fields, or in external trade. The econometric model will also help analyse the probable consequences of a change in the final demand on the market and on the different sectors of the economy.

R. GAGNÉ
Quebec Bureau of Statistics

Ontario

The former Statistics Branch of the Department of Economics & Development was established in 1966 as the Ontario Statistical Centre and it now operates as an integral part of the Office of the Chief Economist.

The primary objectives of the Centre are to collect, store and produce statistical information in the framework of the general purpose information system. There are four sections in the Centre:

1 *The Statistical Standards and Research Section* is responsible for statistical research, sample designs and for developing common coding and classification systems. The Section co-operates with the Ontario Department of Labour and the Department of Municipal Affairs in conducting a number of surveys. It provides technical advice in sample design and statistical research to other sections of the Centre and other branches of the Department. It also prepares directories for trade promotion purposes.

2 *The Interdepartmental Services and Special Assignments Section* has as its main objective the collecting, compiling and storing of significant socio-economic data from various sources. It also compiles statistics from administrative data available in different departments and agencies of the Ontario government and in the municipal governments. Projects are conducted jointly with the Departments of Financial and Commercial Affairs, Municipal Affairs, and the Pension Commission of Ontario. The section also acts as liaison between the Statistical Centre and other departments of the Ontario Government, and is responsible for answering statistical inquiries from the public, from business and researchers.

3 *The Applied Statistics Section* has dual responsibilities. It conducts the Census of Manufactures jointly with Dominion Bureau of Statistics using DBS forms. This Section has been recruiting staff and is now close to the budgeted complement. Another project of this Section is the preparation of input-output tables for the province. Data collection is scheduled to commence shortly.

4 *The Systems and Programming Section* is composed of both scientific and data processing programmers and systems analysts. It has already completed preliminary development of a basic integrated system of statistical programs for ordinary manipulation of general data files. Program components include data selection, description (including visual display), correlation, regression analysis, canonical analysis, time series analysis, and cross spectrum analysis. The Section is presently developing a generalized file system. This will allow for file construc-

tion in a standardized form on tape, disk, or a combination of both.

KENNETH CHENG
Ontario Statistical Centre

Alberta

Presently in progress is an analysis of the extent to which production in western Canada is resource dependent. Specifically, this study is to ascertain the nature and relative size of primary production in each major resource-based industry, and the extent to which primary products are processed in western Canada.

The Alberta Bureau of Statistics offices are now located in the heart of downtown Edmonton. The new address is

Alberta Bureau of Statistics
1529 – Centennial Building
Edmonton, Alberta.

This recent move brings together, for the first time in many years, all branches of the Alberta Department of Industry and Development.

D. I. ISTVANFFY
Alberta Bureau of Statistics

British Columbia

In a dynamic economy such as British Columbia's, statistical patterns, of necessity, are required to change. Three such changes are now in progress:

1 Continuing discussions have been held with the Dominion Bureau of Statistics concerning an increase in the number of census divisions for the Province to cope with the economic and statistical requirements of a rapidly developing economy. In many instances, these proposed divisional boundaries conform to recognized provincial administrative units such as hospital districts, regional districts, etc.

2 Joint Federal-Provincial participation in collecting organized labour data is well underway. Similarly, a salary and wage rate pilot study which entails Provincial Government contacting or interviewing about 100 major employers is being undertaken.

3 The B.C. Bureau of Statistics Data Processing Division centralizes most of the work done on data processing equipment. As a result, the Bureau has a surprisingly wide variety of machines and techniques available.

M.H.A. GLOVER
B.C. Bureau of
Economics and Statistics

Conferences

Joint Statistical Meetings, Washington, D.C.

Washington was the location (between December 27-30, 1967) of the Annual Joint Statistical Meetings of the American Statistical Association, The Institute of Mathematical Statistics, and the Biometric Society (Eastern & Western North American Regions). The meetings were part of a joint program of the Annual Meetings of the Allied Social Science Associations held in Washington at the same time. At the Joint Statistical Meetings distinguished economists and statisticians drawn from various disciplines had a packed program and worked to a tight schedule. The Meetings embraced a wide range of subjects including:

i Population Projections for Small Areas;
ii Social Statistics;
iii Applied Multivariate Analysis;
iv Demography;
v Reliability Theory;
vi Data Analysis;
vii Sequential Theory;
viii Genetics;
ix Biometrics;
x Manpower Analysis; and
xi Regional Economic Models.

The papers presented are too numerous to summarize here, but we append a few notes on Canadian participation. For those interested, the 1967 Abstracts Booklet of the papers presented at the Joint Statistical Meetings is available from the American Statistical Association, 810, 18th St. N.W., Washington, D.C. 20006 (price $1.00). The Econometric Society's booklet on Preliminary Program and Abstract of Papers contains summaries of the papers discussed at their Washington Meeting. A booklet Joint Program Allied Social Science Associations, Washington, D.C. contains the programs of the various sessions held in Washington.

W. D. Porter, Director of the Census Division, DBS, was the Chairman at the session organized by the American Statistical Association, on "Aspects of the 1966 and 1971 Census Programs in Canada". A full-scale test of a census by mail was carried out by the DBS Census Division in London, Ontario, during 1967. The last ten years have seen a great deal of experimental work leading to a better understanding of census methods and data. At the same time demand for census statistics has increased enormously.

Dr. I. P. Fellegi and Dr. K. J. Krotki of the Dominion Bureau of Statistics presented

a paper on "The Testing Program for the 1971 Census of Canada". The testing program was motivated by the following main considerations:

1 Examination of methodological changes in taking a census. This included the testing of:
- a self-enumeration work with or without the use of mail delivery;
- b use of address registers for mailing purposes;
- c automatic geographic coding.

2 Setting up of the organization required to cope with the new method. This included:
- a editing questionnaires locally;
- b telephone follow-up;
- c personal follow-up and coding.

3 Improvement of coverage. The use of postal checks and quality control were designed for this purpose. A measurement of under-coverage in the London census test is provided by the post-enumeration survey.

(The main advantage of a self-enumeration census is that it is more accurate than traditional methods because it eliminates the contribution of enumerators to the total error, since each adult member of the household answers the census questions for himself.)

Finally, the paper deals with the following subjects:
- a the provision of data early in machine readable form and in a form more consistent with other sources and uses of data;
- b attempting to meet new and more detailed needs of users.
- c computer edit – which deals with edit and imputation of data;
- d experience with address registers as a potential vehicle for mailing out census forms;
- e further methodological tests such as testing of questionnaire, alternative wording and format, etc.

After a comparison of the differences in census taking in Canada and the United States attention is drawn in the paper to the method of census taking by mail with an edit and follow-up control from the London (Ontario) office in September, 1967. Further the evaluation program proposed and partly carried out in conjunction with this test is outlined in the paper and the tentative plans for continued testing prior to the 1971 Census are summarized. Comments on address forms, registers and experiences with the production side of the mail census are also made.

Other problems concerning the Census are dealt with from a different angle in another paper by Dr. I. P. Fellegi and J. I. Weldon in "Computer Methods for Geographical Coding and Retrieval of Data in the Dominion Bureau of Statistics". Public and private agencies increasingly demand statistical information specially from census data tabulated by user-specified areas. It is also desirable that statistical organizations provide custom-made tabulations promptly and at reasonable cost. Experimentation is underway in the Bureau to develop an integrated system of computer programs for storing and retrieving census data and for the subsequent processing of statistical tabulations. The essential features of the proposed system are geo-coding the enumerated addresses by structuring census data in randomly accessible form and by providing a generalized query language permitting a non-programmer to retrieve relevant information.

The paper suggests that the level of reliability of the retrieved sample will have to be monitored by both the users of statistics and the statistical agency. Additional work on the implications of sampling and confidentiality requirements remains to be done.

A third paper presented by Dr. K. J. Krotki, R. C. Muirhead and R. Platek (all of DBS) is entitled "Evaluation Program of the 1966 Census of Canada". It provides a historical and theoretical explanation of the 1966 Census techniques. The purpose of the evaluation program was to establish a measure of under-enumeration of the 1966 Census of Canada for national, provincial and regional areas. The evaluation program consisted of the following studies:
- i the reverse records check of the enumeration of individuals during the 1966 Census, vital registrations records, and international migration records since the 1961 Census. This project was used to provide a measure of under enumeration in the 1966 Census by various age and sex groups of the Canadian population;
- ii the matching of census questionnaires with Labour Force Survey documents. This technique is expected to enable DBS to measure the coverage and content error in the Census;
- iii the coverage results of the quality check for agriculture. These content investigations aim at isolating types of errors contributing most significantly to census inaccuracies;
- iv the demographic analysis of age and sex distributions in 1961 and 1966;
- v a list of households produced for the census purposes in two cities – Waterloo and Kitchener – has been checked against a number of other sources of addresses, including the field listing of households in London, Ontario produced for the 1971 program; and
- vi the study of postal change of address cards was aimed at establishing the difficulties of enumerating the mobile section of the population. Some 2,000 cards have been compared with relevant 1966 records.

Inquiries concerning the papers presented by the Dominion Bureau of Statistics at the American Statistical Association meeting may be sent to the authors concerned.

Two DBS Papers Presented to I.S.I.

What are the main forces at play in the shaping of statistical programs for a country at Canada's level of statistical development? This was the question dealth with by Dr. S.A. Goldberg, Assistant Dominion Statistician, DBS, in his paper on "The Demand for Official Statistics and their Utilization in Canada with Special Reference to the Role of National Accounts". The paper was presented at the 36th session of the International Statistical Institute held in Sydney, Australia, last fall.

Dr. Goldberg began by commenting on three interrelated questions. First, what are the processes of detection and evaluation of the demand for, and the use of, official statistics? Second, what factors can be credited with rendering some demands successful in that they are accommodated by the statistical office, while others remain unsatisfied? Third, what has been the role of the national accounts, among other forces, in demand generation and in enhancing the utilization of statistics? Attention is drawn in the paper to the role of specialist subject-matter committees in DBS and joint Federal-Provincial consultations in assessing statistical needs. The importance of a "strong survey capability" is underlined in providing a better chance for demands to become effective.

Computerization in DBS will affect demand satisfaction in four important ways.

First, a vast volume of work will become possible at a smaller cost with higher precision and speed. Second, for efficient utilization of the computer, the complex elements of a survey must be viewed as a highly integrated and interrelated operation, with additional gains in terms of efficiency, timeliness and the quality of the data. Third, the necessity of proper computer-time utilization leads to the articulation, codification and standardization of concepts, definitions, classifications, methods, procedures and formats, and thereby to a more complete integration of items of data from various surveys, and simultaneously facilitates joint or interrelated use of information from various sources. Fourth, computer technology promises to facilitate the development of packaged retrieval and manipulative programs which will provide users, on request, with detailed and analytic arrangements on data to their own specifications.

National income and expenditure accounts greatly influence the demand and utilization of economic data as they provide an indispensable quantitative framework for effective economic and statistical analysis.

The other paper presented by representatives of the Dominion Bureau of Statistics at the Sydney Conference dealt with the problem of data storage and linkage.

This paper was by Dr. I. P. Fellegi and A. B. Sunter and entitled, "An Optimal Theory of Record Linkage". It Attempts to provide a mathematical model for a computer-oriented theory of record linkage. Four important factors were cited as contributing to the need for such a model:

a the creation, often as a by-product, of administrative programs of large files containing important statistical information whose value could be heightened through linkage of individual records and the interrelation of statistical information contained therein;

b the vastly increased need for frequent and detailed statistics, often for small areas, which it would be most expensive to satisfy through sample surveys or censuses;

c increase awareness in many countries of the potential of record linkage in in medical and genetic research; and

d advances in electronic data processing machinery and software, which make it appear tantalizingly feasible to carry out the huge amount of operational work of comparing records between even medium size files.

The paper presented by Dr. I. P. Fellegi and Mr. A. B. Sunter on "An Optimal Theory of Record Linkage" attempts to fill a hitherto existing gap by providing a mathematical model for a computer-oriented theory of record linkage. This theory is intended to provide a basis for a statistical inference to be made concerning the match status of two records, one from each of two files.

Inquiries concerning the papers should be addressed to the authors at DBS.

Meeting at DBS on Analysis of Service Industries Data

Discussion was effectively stimulated by a number of well prepared papers at a meeting in Ottawa on October 20 and 21, 1967, of the Conference on Research in Income and Wealth of the U.S. National Bureau of Economic Research. The organizer was Victor R. Fuchs of the NBR and the subject was "Production and Productivity in the Service Industries".

The Conference was held to discuss the implications for statistical and economic analysis of the growing importance of the service industries to the U.S. and Canadian economies. The service industries sector have been increasing in importance in the economies of both countries. This fact has obvious and strong implications for economic analysis and policy, and hence calls for an adequate statistical base and for clarification of basic concepts and theory relating to these industries. The Conference agreed that conceptual research and statistical development relating to this area should be faced now and with some urgency.

By convention or of necessity, a wide range of input measures of one kind or another are used in order to estimate real output in the service industries. Normally, constant price intermediate inputs are deducted from constant price output to yield the desired real Gross Product Originating. This is done wherever an industry can report sources of operating revenue and purchases of intermediate inputs. This approach is universally followed, at least in commercial or profit-motivated industries, and with the notable exceptions of the banking industry and the credit agencies, holding and other investment company industries, where normal revenue and expense items (to these industries) reflected in profits, are reversed with the result that these industries are depicted as negative contributors to G.N.P. To avoid this illogical result imputations are added for institutions accepting deposits. These imputations are primarily based on input concepts and may not be useful for the measurement of real G.P.O.

The problem is best illustrated by looking at the results of the Office of Business Economics approach to a real G.P.O. measure for banking. In a paper presented by Martin L. Marimont of the O.B.E., Table I indicates that the constant dollar contribution of banking to real G.N.P. has fallen dramatically compared with its current dollar contribution, and is clearly quite different from other industries. A look at employment data for banking will substantiate the view that if one accepts the validity of the real G.P.O. series prepared by the O.B.E. then one has to accept a sharp and long-term downward trend in the labour productivity ratio. This decline is apparent over the entire two decades covered and, since it is of the order of nearly two percentage points per annum on average, it is highly suspect. Conceptual problems in these industries are not limited to any one country, but are common in the field generally.

It is difficult to accept the fact that industries such as credit agencies, holding, and other investment companies, make a negative contribution, to G.N.P., in spite of the imputation added to savings and loan associations. Banking would certainly be in the same position were it not for the service cost imputation made there. These phenomena are not logical when attempting to measure output or productivity for such industries. A strong view was expressed that the conventions associated with measurement should be re-examined. The convention of using labour input to measure the output of non-profit institutions and of government was cited.

Other points emerged that may be of interest, including the fact that in both Canada and the U.S., more than half of the labour force is now engaged in the service industries; that this long term shift to services is still continuing and income elasticities do not explain it. There are indications that productivity is not growing as fast in the service industries as in the goods industries even though there could be some downward bias in the present service industry measures. There are profound differences in the trend

of labour quality in the two sectors, and productivity is less stable over the business cycle in the service industries than in the goods industries.

There are still many unknowns however including such questions as the relation between growth and productivity, the desirability of including development costs (inclusive of human resources) in output, the effects of unionism on productivity, the evolving nature of technological change originating with labour quality and other resources between goods and service industries, the significance of elasticities of substitution for the service industries, and the adequacy of the present conceptual framework of the national income accounts for service output measurement.

Overall, the measures used for service industries depict a story of incomplete and inadequate statistical data for an economic sector which is growing in importance, and the story seems to be international in scope. From a conceptual point of view, the solution of the problem is difficult.

There was some feeling expressed that the difficulties may not soon be overcome in any basic sense. Others felt however, that efforts to make progress in measuring these increasingly important industries must be intensified and that the quality of the papers presented will go a long way toward provoking the necessary discussion which hopefully, will bring us closer to solutions.

A better appreciation of the range of subject matter covered at the meeting can be obtained from the papers presented, which were:

1 Measuring Real Output for Industries Providing Services - - - OBE's Concepts and Methods by Martin L. Marimont, Office of Business Economics;

2 What is Output? - - Problems of Definition and Measurement by Arthur B. Treadway, Northwestern University;

3 Some Problems in the Measurement of Productivity in the Medical-Care Industry by Melvin W. Reder, Stanford University;

4 Alternative Measures of Real Output and Productivity in Commercial Banks by John A. Gorman, Office of Business Economics;

5 The Growth of Sales per Manhour in Retail Trade, 1929-1963 by David Schwartzman, New School for Social Research;

6 The Service Industries in Canada, 1946-66 by David A. Worton, Dominion Bureau of Statistics;

7 The Service Industries in the 19th Century by Robert E. Gallman, University of North Carolina, and Thomas J. Weiss, University of Kansas.

Inter-American Statistical Conference: Venezuela

The Dominion Statistician, Mr. Walter E. Duffett, was present, as representative of Canada, at the Fifth Inter-American Statistical Conference, held in Caracas, Venezuela in October. He was accompanied by Mr. A. B. McMorran, Director of the Tabulating Services Division of DBS.

Canada is a member of the Inter-American Statistical Institute which arranges these conferences. The main topic of the fifth conference was a program of development and organization to improve the effectiveness of statistical offices.

A sub-Committee known as the "Committee for the Improvement of National Statistics" held meetings for most of one week. This committee normally meets more frequently than the main conference, and is a working committee of heads of statistical offices. At present it is engaged in developing basic standards for social and economic statistics in Latin America.

Owing to the great interest in Latin-American countries in Canadian experience in the use of computers for statistical purposes, Mr. McMorran spoke at a technical meeting on this subject, organized by Mr. Duffett. Mr. McMorran's paper traces the development of computerization in DBS since the 1951 Census of Canada and examines the more important problems confronted in the processing of data and the installation and rationalization of computer applications. Due to census processing requirements and demands for additional data in all census fields, DBS acquired one IBM 705 and one IBM 1401 computer system in 1960. While regular statistical functions were increasingly computerized, limitations by way of shortage of programmers until mid-1966 constituted serious restraints on computer operations. Report generator or simulation programs for a large part of the tabulating work were used pending transfer to fully programmed computer processing to meet, at least in part, the shortage of programming resources.

Copies of the paper "Electronic Computers in Data Processing" may be obtained from Mr. A. B. McMorran, Director, Tabulating Services Division, DBS, Ottawa

Fifty Papers Presented at 10th IARIW Meeting

About 140 persons attended from 32 countries (including Canada) when the 10th General Conference of the International Association for Research in Income and Wealth was held last August at Maynooth, Ireland. Some 50 papers were presented.

The papers were divided into groups which were then dealt with at the various sessions. The first four sessions, held on August 21st and 22nd, were concerned with deflation and the measurement of production, including construction, quality changes and prices. The topics of other sessions included education and government, centrally planned and developing economies, forecasting, financial accounts, input-output analysis, and the proposed U.N. System of National Accounts and its relationship to the Material Product System.

Among the topics discussed at the session on deflation were the following:

1 The need to pay much more attention to prices.

2 The need to determine the accuracy of available data in an objective way.

3 The need to fully inform the public of data inadequacies.

4 The need to "fill in" the System of National Accounts in order to reflect the importance of such items as transfer payments.

5 The need to measure productivity and therefore the need to measure all inputs in constant prices.

6 The need to determine the interrelations between components of the System of National Accounts, in particular through studies of embodied technology, terms of trade, and production functions.

The papers presented included three contributions from Canada, one by Betty J. Emery and Gordon J. Garston of DBS, (measurement of Constant Dollar Aggregates in Canada), the second by D. J. Daly and D. Walters of the Economic Council of Canada, (Factors in Cánada-United States Real Income Differences), the third by Dr. O. J. Firestone, University of Ottawa, (Education and Economic Development – Canadian case). Papers presented by other countries included:

1 National Product at Constant Prices in the Federal Republic of Germany, by Dr. Hildegard Bartels, Wiesbaden;

2 Real Output Measurement in the United States National Income and Product Ac-

Announcing

counts, by Lawrence Grose, U.S.;
3 An International Comparison of Methods and Measures of Sector Real Output Growth, by J. McGibbon and T.P. Hill, U.K.;
4 Calculation of National Accounts at Constant Prices in Norway, by Erik Homb, Oslo;
5 Comparison of Latin American Real Incomes, by Stanley N. Braithwaite, U.N. Economic Commission for Latin America;
6 National Accounting at Constant Prices and Constant Productivity, by R. Courbis, France;
7 The Real Output of Financial Intermediaries, by John A. Gorman; U.S.;
8 Needs for Consistency and Flexibility in Measures of Real Product by Industry, by Milton Moss, U.S.;
9 The Measurement of Quality Changes, by J. L. Nicholson, U.K.;
10 Principles in the valuation of Human Capital Stocks and Flows, by Mary Jean Bowman, U.S.;
11 Mid-Term Projection Method in Financial Flows used in the Preparation of the Fifth French Plan, by Serge Barthélémy
12 Public Sector in Financial Flow Statements: Japan's Case, by Tatsuya Samukawa.

Partly because of the large number of participants, some of the topics did not receive much useful discussion. Later on in the conference, the practise of individual authors presenting their papers and the use of appointed discussants was adopted.

The next meeting will take place in Israel in the late summer of 1969. The program includes: The Role of Prices in the National Accounting Framework; the Distribution of Income; Regional Accounting; Demographic Accounting; and Financial Flows.

Phyllis Dean of Cambridge University was named chairman of the Association to succeed R. C. Geary of the Economic Research Institute, Ireland.

Announcing . . .

In Newfoundland **Edward B. Power** has been appointed Director of Statistical Services. This is a section of the newly-formed Economics and Statistics Division of the Department of Finance. **Paul S. Craniford** has been named Assistant to the Director of Statistical Services.

Important staff changes have been announced by the Alberta Bureau of Statistics. **D. H. Sheppard** has been appointed Supervisor of Market Research. **R. E. Armit** has been named Supervisor of Labour Statistics, and **G. H. Wright** becomes supervisor of Labour Research.

Frederick J. Rashley, Director of the Merchandising and Services Division, DBS, retired in January. Mr. Rashley began service with DBS as a temporary census clerk and served for over 35 years in progressively important functions. He was appointed Director of Merchandising and Services in 1963.

Gerald Snyder has been appointed Director of the Merchandising and Services Division succeeding Mr. Rashley. Mr. Snyder was formerly Chief of the Current Statistics Section (Retail) in the Merchandising and Services Division.

Guy Labossière replaces Roy Loken as Director of Organization and Personnel Services in DBS. Mr. Loken has joined the Public Service Commission as Director of the Social-Economic Program of the Staffing Branch.

William C. MacIver has been appointed Branch Administrative Coordinator, Economic Statistics Branch. Previously Mr. MacIver was a Personnel Administrator in the Department of Transport.

Maurice A. J. Lafontaine has been named Assistant to the Director-General of the Economic Statistics Branch. Mr. Lafontaine was Head of the Industry Production Measures Unit of the National Accounts, Production & Productivity Division, and had been temporarily with the Public Service Commission as Advisor on recruitment of economists and statisticians.

Louis E. A. Lefaive, Chief of the Job Survey Section, Labour Division, DBS, will soon begin new duties as Director of Fitness and Amateur Sport, Department of National Health and Welfare.

J. Benedict Smith has joined DBS as Chief of the Consolidation and Co-ordination Section of the Governments Division. Mr. Smith was previously with the Department of Finance.

George M. McIlveen joined DBS in January as Chief of the Federal Government Section of the Governments Division. Mr. McIlveen came to DBS from the Comptroller of the Treasury.

Yves deJocas has been appointed Chief of the Census Use and Development Section of the Census Division. Previously Mr. deJocas was a Statistics Professor at the U.N.-sponsored International Centre of Statistical Training, Cameroon, Africa.

Franklin G. Boardman has been appointed Chief of the General Population Section of the Census Division. Mr. Boardman's previous position was Chief of the Vocational Training Section, Education Division, DBS.

Dr. Anatole Romaniuc has been selected as Chief of the Population Estimates and Projections Section, Census Division. Dr Romaniuc comes from the University of Ottawa where he was an Associate Professor of Demography and Research.

Dr. Karol S. Krotki, formerly Research Assistant Director, Census Division, has accepted an appointment as Professor of Demography at the University of Alberta, Edmonton.

Ben Hazzan, former Chief of Statistics Use Development in the Information Division, has accepted an appointment as Regional Manpower Economist in the Quebec Region of the Department of Manpower and Immigration.

Dr. James Johnston has been selected as Chief of Statistics Use Development, succeeding Mr. Hazzan. Dr. Johnston will be mainly concerned with the initiation of a new DBS program for the development and extension of uses of DBS data.

Michael Issa has been named Statistics Use Development Officer for DBS in the Quebec region. Mr. Issa's address is DBS, Suite 830, 1165 Bleury Street, Montreal 1, P.Q. His previous position was Research Economist for the Ontario Department of Labour.

Rocco Graziadei has been appointed Administrative Officer, Integration and Developments Staffs, DBS. Mr. Graziadei was previously Personnel Movements Officer, R.C.A.F.

Robert N. George has been selected as Administrative Co-ordinator, Financial Statistics Branch. Previously, Mr. George was a Staff Officer with the Canadian Armed Forces.

New Reports

N.B. Labour Force Data

Wage and hours-of-work data covering most of the labour force in the Province of New Brunswick is contained in the *1966 Industrial Wage Survey* published by the New Brunswick Department of Labour. This publication represents the third industrial wage survey, which was designed to investigate, the nature of New Brunswick's wage structure.

Now a continuing annual project, the survey developed from a need to supplement wage data compiled by the Federal Department of Labour and the Dominion Bureau of Statistics because the Federal surveys cover only establishments employing fifteen or more workers. In New Brunswick this takes in only about 25 per cent of all establishments and about 50 per cent of the labour force whereas the New Brunswick study encompasses nearly half of the province's 10,338 establishments and covers 75 per cent of all the people employed in the province.

The Publication contains statistics from a sample of firms participating in the Workmen's Compensation program. One important group of tables shows average hourly wages for major industry groups by county; an appendix deals with population, labour force, wage earner ratios for the province during selected years from 1901 to 1961, and compares these ratios to Ontario and to all of Canada. A breakdown by New Brunswick counties is also shown.

The publication is available from the New Brunswick Department of Labour, Fredericton, N.B.

Special Education for Exceptional Children

Statistics of Special Education for Exceptional Children – 1966, recently published by DBS, satisfies a long apparent need for a count of exceptional children enrolled in special education programs of all kinds along with some information about their teachers.

Since the last nation-wide compilation of statistics on special education, published for 1953-54, the only additional data published by DBS was enrollments in some auxiliary and special classes in the annual "Survey of Elementary and Secondary Education", as well as the annual series on enrollment and staff in schools for the blind and the deaf.

In view of the lapse of time since the last nation-wide survey, it was felt necessary to collect as much information as possible on a somewhat exploratory basis, with an emphasis on comprehensiveness. It was hoped that a broad-brush treatment outlining the provision for all types of exceptional children – gifted, retarded readers, slow learners and educable retarded, trainable retarded, emotionally disturbed, visually or hearing handicapped – to name some of the categories covered – might serve to put into perspective the more localized and precisely defined studies of the kind that would be useful in relation to administrative action.

The resulting 103-page publication provides a wealth of information in tabular form which apart from providing a province-by-province count of children in each category of exception, provides breakdowns by type of institutions exercising control over their training, such as Provincial Department of Education-run classes, school board, church-run, and so on. Qualifications of teachers and teacher salaries are another example of the information presented. The report contains a comprehensive bibliography of books and articles related to the subject.

Further information concerning the publication can be obtained from the Chief of the Research Section, Education Division, DBS, Ottawa.

Special Labour Force Studies

Analyses of selected economic, social and demographic aspects of the working population in Canada are presented in a new series of Special Labour Force Studies published by DBS. The studies as prepared under the direction of Dr. Sylvia Ostry who is also co-authoring the labour force monograph material. The series is somewhat similar in concept to the labour force census monographs but contains a less intensive analysis. While the monographs use 1961 census data as a primary source, the Special Labour Force Studies rely mainly on supplementary questions attached to the monthly survey of the labour force and use census tabulations as a secondary source only.

The series is broken into two sub-series. The first, consisting thus far of five individual publications, is designed to reach a broad audience interested in the changing nature and composition of the Canadian labour market. The second series recognizes the fact that some aspects of manpower development require a somewhat more technical analytical approach. Thus the second series is intended as a companion series of technical papers. The first of this companion series is now available.

The complete series of Special Labour Force Studies now available are:

1 Educa*tional Attainment of the Canadian Population and Labour Force 1960-65* by Frank J. Whittingham formerly of DBS, includes estimates of the relationship between educational attainment and labour status and activity, and a comparison between native-born Canadians and post-war immigrants.

2 In *Annual Work Patterns of the Canadian Population 1964* by Frank J. Whittingham formerly of DBS and Bruce W. Wilkinson of the University of Western Ontario, the annual work experience of the Canadian population is compared with data from monthly surveys. It includes an analysis of long-duration unemployment, and part-year and part-time work.

3 *The Job Content of the Canadian Economy 1941-61* by J.G. Scoville of Harvard University has a review of the theory and measurement of job content together with an attempt to estimate the kinds of jobs in the Canadian economy by function and levels. A comparison is made with the United States.

4 *Geographic Mobility in Canada October 1964-October 1965* by May Nickson analyses the migration of the Canadian population between municipalities by age, sex, and region. For male migrants, aged 17-64, labour force status and reasons for leaving are also included.

5 *Women Who Work: Part 1* by John D. Allingham, University of Western Ontario and the Australian National University contains an evaluation of the relative importance of age, marital status, and education as factors influencing the participation of women in Canada's work force.

6 Series B - - No. 1. *The Demographic Background to Change in the Number and Composition of Female Wage Earners in Canada, 1951 to 1960* by John D. Allingham is an evaluation of demographic change over the 1951-1961 decade and its impact on the composition and number of female wage earners in 1961.

Balance of Payments

Publication by DBS of a compendium of balance of payments statistics from 1946 to 1965 has considerably facilitated the study of this major field by assembling and presenting in one convenient and comprehensive volume, revised estimates for two decades of statistics. Until now, lengthy time series and much detail were obtainable only by using the Bureau's quarterly and annual balance of payments reports (DBS Catalogue numbers 67-001 and 67-201) and monthly reports on Canada's international transactions in portfolio securities (DBS Catalogue number 67-002), many of which were out of print. The publication contains revisions and extended detail, covering period, geographical area and industry distribution with cross-references. The provisional figures for 1965 have subsequently been revised in the *Quarterly Estimates of the Canadian Balance of International Payments* for the second quarter of 1967.

(The Canadian Balance of International Payments, A Compendium of Statistics from 1946 to 1965 (235 Pages DBS Catalogue No. 67-505. Price $2.50).)

More Penetrating Analysis of Census Data

The first of a series of monographs based on 1961 census data, *Historical Estimates of the Canadian Labour Force,* is a good example of the kind of census data analysis made possible by two factors: the amount of new and more detailed information available from the 1961 census compared to previous ones, and the use of the computer to provide a greater variety of tabulations as the basis for more penetrating analytical studies.

Census information is widely used in Canada and this publication is part of a plan to produce analytical monographs on selected topics which can be used to supplement the census statistical reports. This first study, by Frank T. Denton and Dr. Sylvia Ostry makes use of information from the 1961 as well as from previous censuses and other sources to provide new historical estimates of the labour force on a definitionally consistent basis. These estimates will be used for analysis in some of the later studies in the series.

Other monographs in the labour series, all by Dr. Ostry, will be published soon. These include: *Unemployment in Canada, Provincial Differences in Labour Force Participation,* and *Occupational Composition of the Canadian Labour Force.*

In addition to the labour monographs, others are planned on marketing, agriculture, fertility, urban development, income, immigration and internal migration. Those on which work is well advanced include: *Tendances et facteurs de la fécondité au Canada* by Jacques Henripin; *Urban Development in Canada* by L.O. Stone; *Trends in Canadian Marketing* by G. Snyder and M.S. Moyer; *Incomes of Canadians* by J.R. Podoluk.

Alberta Trade Index

The Alberta Bureau of Statistics has published, for free distribution, its 1967 edition of the *Alberta Trade Index.* This publication provides a listing of Alberta manufactured products, selected items of imports, natural gas processing plants, coal mines and quarries timber lessees and the various provincial news media.

Also published was the interim *Salary and Wage Rate Survey – 1 August, 1967,* which provided summary wage data for Alberta, Calgary and Edmonton.

Consumer Finance Reports

For the first time a Consumer Finance survey taken in the Spring of 1966 included farm families and the forthcoming report *Distribution of Incomes in Canada by Size, 1965,* (Cat. No. 13-528) will contain income distributions for all persons, families and unattached individuals residing in private households with a few minor exceptions. An appendix to the DBS report will, however, present the same tables excluding farmers and their families thus providing a link with previous income surveys that covered a more restricted population.

The main report as well as the appendix will contain two basic series of tables - income distributions for persons in receipt of income and income distributions for family units (families and unattached individuals). Percentage distributions by size of income, mean and median incomes will be published by personal or family characteristics and such variables as area of residence, major source of income, etc. On most of these characteristics historical comparisons can be made for the non-farm population going back to 1951 with the reservation that data are published on a current dollar basis and no account has been taken of changing price levels over the period of time.

The 1965 income report will contain besides the usual tables described above cross-classifications of family or individual incomes by educational attainment of the family head or person. Similar cross-tabulations will be also shown by income level and immigration status. Although the small sample size (less than 9,000 families) will not permit detailed analysis of these data, the tables will provide some indication about the income differentials between native-born Canadians, pre-II World War immigrants and more recent immigrants. These estimates as well as estimates of income differentials by educational level will be the first ones available since the 1961 Census.

The Consumer Finance Research Staff plans to publish a historical summary of the non-farm income reports for the years 1951, 1954, 1957, 1959, 1961 and 1965. This historical publication will contain a selection of tables on a constant dollar basis using the Consumer Price Index to deflate incomes to the 1961 price level. Another section of this publication will show the composition of each income quintile and historical changes in terms of the characteristics of persons and families making up the lowest income quintile, for example, can be analysed.

(Inquiries concerning these reports may be directed to the Consumer Research Finance Staff, DBS, Ottawa.)

A special feature of the report *Incomes, Assets and Indebtedness of Non-Farm Families in Canada, 1963,* published by the Consumer Finance Research Staff is an examination of ownership of publicly traded stocks by characteristics of stock-holders and the size and composition of portfolios. The report is based on an inquiry into family incomes, debts and assets, including investments in corporations and real estate owned for investment purposes. A similar survey is not planned for several years, at least not before 1970.

Earlier two surveys on incomes, debts and assets were conducted and the conclusions are contained in the report *Incomes, Liquid Assets and Indebtedness of Non-Farm Families in Canada, 1955.* A third survey, in the Spring of 1964, collected relevant data from 6,400 families and unattached individ-

uals. The survey coverage was expanded to non-liquid assets such as owner-occupied houses, real estate held for investment purposes and other financial investments. The three surveys were undertaken as part of a continuing program of surveys on Consumer Finance.

In addition DBS has published reports based on income data in publications entitled *Distribution of Non-Farm Incomes in Canada by Size* since 1951.

Manufacturing Fixed Capital Flows and Stocks

How important is the rate of capital formation in determining the level of economic activity? What are the relationships among rates of capital formation, expected levels and patterns of final demand, and the different stocks of capital which various industries hold in relation to their output? How is capital accumulation related to changes in the productivity of labour by industry?

Fixed Capital Flows and Stocks - - Manufacturing - - Canada 1926-1960, published by DBS is intended to shed light on these and other questions of interest to economic theorists and policy makers. Professor T.K. Rymes, now of Carleton University, prepared the two-volume report and refers to the over 700 pages as a modest probe by DBS into the area of capital measurement.

The volume subtitled "Methodology" presents a review of concepts, sources and methods used in estimating fixed capital flows and stocks in manufacturing, and also contains an analysis of the data obtained, as well as a partial set of estimates extracted from the companion volume subtitled "Statistical Supplement", which contains the complete presentation of tabular material. Thirteen groups of manufacturing industries are analysed in the report. The report constitutes a part of a large set of fixed capital flow and stock estimates relating to the whole Canadian economy. Figures for non-manufacturing industries are not yet suitable for publication but it is hoped to release additional estimates from time to time as they are improved.

"Fixed Capital Flows and Stocks - - Manufacturing - - Canada 1926-1960", Catalogue 13-522 Methodology; Catalogue 13-523 Statistical Supplement, can be ordered from Publications Distribution, DBS, Ottawa.

Fighting Poverty

Over 150 Federal programs are directly concerned with improving the well-being of Canadians and are therefore related to the problem of poverty. These programs cost $2.7 billion in 1966. Complimentary provincial and municipal expenditures were even higher. As well, hundreds of private and voluntary organizations, helped by private donations, are fighting poverty.

To help bring these programs together, to minimize duplication, to help in seeing that gaps are filled, and promote the sharing of experiences, creation of a Special Planning Secretariat was announced in the spring of 1965.

Fighting Poverty in 1966 is the Secretariat's first report. It is in part an abbreviated account of the work of the Special Planning Secretariat, and in part an account of anti-poverty programs being administered by the many Federal agencies. The 42-page illustrated bilingual report includes relevant statistics and expense breakdowns of the Federal program.

Fighting Poverty in 1966 – Special Planning Secretariat – August 1967 is available from the Queen's Printer under Catalogue Number CP1-1/1966.

Manufacturing Statistics And Changes in S.I.C.

"Classifications, Concepts, Confidentiality and the Use of Statistics on the Manufacturing Industries by Geographers", was the title of an article by Vincent R. Berlinguette, Director-General of the Economics Statistics Branch of DBS which appeared in the *Canadian Geographer XI,* 1, 1967. The article is concerned with three aspects of the Census of Manufactures and deals with the subject in some detail. Because of its value as a outline of the concept and historical development of DBS manufacturing statistics, it is reviewed here so that readers who are interested may obtain copies.

As the title indicates, the article deals with the subject from three standpoints:

Changes in Industrial Classifications

While it is true that we speak of three industrial classifications being used over the years for DBS manufacturing statistics, the 1960 classification now in use is essentially a revision and modernization of that of 1948 which in turn was based on the earlier classification.

Concerning the effect of classification changes on historical comparability, the fact is that the Standard Industrial Classification is being *continually* changed in small ways in the light of changing circumstances and technology, alterations in the structure of industry and the experience and evolving interests of statistics users. The 1960 revision arose from an extensive review of the impact of these various considerations on the classification, although at the same time, the really major changes were concentrated in relatively limited areas of the classification and do not affect historical comparisons as much as might first appear.

The most basic changes in the 1960 revision consisted of disaggregating three large industry groups which melded important forms of primary manufacturing activity with related forms of secondary manufacturing activity. This reflects the fact that since the Second World War, secondary forms of manufacturing have played a more important role in the economy and that discussion of public policy increasingly centers on the development of the higher stages of fabrication.

It should be borne in mind that Canadian manufacturing statistics are part of a larger international system of statistics and that industrial classifications are changed in other countries too. Failure to modernize the Canadian classification would lead to an eventual serious loss of comparability with the statistics of other countries. Comparability through space is as desirable for manufacturing statistics as comparability through time.

DBS was, of course, aware that it was creating problems of historical comparability and gave them serious consideration. With regard to such impact as the revision did actually have on historical comparability, three observations may be made: First, the majority of statistics users appear to be willing to sacrifice some historical comparability for increased quality and usefulness in the current statistics. Second, freezing the system of industrial classification would not necessarily preserve historical comparability for small geographical areas, since over the years there is a considerable incidence of change in the boundaries of some of them. Third, the recent classification changes appear as only one part of the question of historical comparability. In decades to come, further revised systems of industrial classifications will

have to reflect changes in technology, patterns of industrial development, and the interests of statistics users.

Changes in Concept

The introduction of the new establishment and total activity concepts with the annual Census of Manufactures in 1961 rested primarily on the need to improve co-ordination of the statistical system. Before 1961, emphasis was placed on manufacturing activity in the definition of reporting units and respondents were expected to relate all requested statistical categories to their manufacturing operations regardless of whether this was realistic in terms of their accounting records and mix of activities. Under the old establishment concept, manufacturers were asked to accomplish this by estimates - - estimates which in many cases were not satisfactory. Introduction of the new concept helped remedy this by making the Census of Manufactures more a survey of manufacturing establishments and less a survey of manufacturing activity.

The new establishment concept makes it possible to classify each business establishment to only one industry with no double counting or gaps - - impossible to avoid under the old system.

Confidentiality

The Dominion Bureau of Statistics is prohibited by the Statistics Act from revealing any data from an individual return without the prior written consent of the respondent. As users of statistical reports sometimes wonder about the necessity of such a provision, the article outlines the important purposes served by it. Five possible partial answers to the loss of data for sub-provincial areas resulting from operation of the confidentiality rules are advanced in the article, all consistent with the retention of full protection for individual respondents.

Copies of Mr. Berlinguette's article can be obtained from the Information Division, DBS, Ottawa.

Probable University Growth

The Office of Economic Studies on Research and Development of the National Research Council has issued the results of a study on the probable growth of graduate student enrollment and the faculty staff for the next ten years in Canadian universities and colleges. A number of tables give annual figures for the next ten years and tabulate the total student enrollment, the number of PhD's, grants and supply of faculty staff. Special attention is given to the science and engineering faculties.

The report was prepared by O.H. Levine, Chief of the Office of Economic Studies. Its purpose was to develop quantitative descriptions, covering the decade to 1975-76 of: (1) the extent of science and engineering graduate student enrollment (2) the relationship of this enrollment to the enrollment of graduate students in other disciplines and (3) the linking of graduate student enrollment to faculty requirements.

Under the title of Graduate Students and Faculty Resources at Canadian Universities and Colleges, 1967, the publication is obtainable on request from the Publications Office of the National Research Council.

Census Recommendations Published by U.N.

Principles and Recommendations for the 1970 Population Censuses published by the Statistical Office of the United Nations is a document designed to improve census operations to be carried out by various countries around 1970, to improve the value of the compiled census results for national purposes and also to increase international comparability.

The Principles and Recommendations are set forth in six parts and an annex. Part I deals with the definition, essential features and uses of a population census. Part II consists of statements of widely recognized principles of efficient census planning and administration.

These principles of census management are based on detailed studies of successful census procedure and on a synthesis of expert opinion. They are stated in concise terms for the consideration and use of countries as an aid in improving the efficiency, economy and quality of national census operations. Part III is a brief exposition of the role of sampling in the various phases of a population census. Part IV deals with the unit and place of enumeration. Parts V and VI contain specific recommendations regarding census topics, definitions, classifications and tabulations. Recommendations are based primarily on the experience of countries with their 1960 censuses.

The book sells for $2.50 U.S. Currency and carries United Nations Publication sales No. 67.XVII.3.

Survey of U.S. Automobile Travellers in Canada

Arising from a recommendation of the 1967 Federal-Provincial Conference on Economic Statistics held at L'Esterel, Quebec, the Canadian Government Travel Bureau and DBS jointly entered into an agreement with a private agency to conduct an exit-interview survey of foreign visitors travelling by automobile in the summer of 1967. Included in this agreement were clauses giving responsibility for the methodology of this survey. The Sampling and Survey Research Staff designed the survey, chose the sample of interview locations, and specified the estimator. The major part of the costs have been borne by the Canadian Government Travel Bureau and DBS, and contributions were made by the Nova Scotia Department of Trade and Industry and the Ontario Department of Tourism and Information.

The results of the survey are now being evaluated.

PUBLISHED BY AUTHORITY OF THE MINISTER OF TRADE AND COMMERCE

Statistical Observer

Contents

The Statistical Observer is a publication designed to contribute toward informing economists, statisticians and related professionals throughout Canada about selected statistical and research developments undertaken in DBS, in other Federal departments and agencies, in provincial departments, in universities and in business and independent research organizations.

Suggestions and contributions of articles for publication should be addressed to the Editor, Statistical Observer, Information Division, DBS, Ottawa. (Telephone 996-2752).

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DBS 1918-1968

Earlier this year, the Dominion Bureau of Statistics celebrated its fiftieth birthday. The first Statistics Act, the work of Dr. R.H. Coats who had been Dominion Statistician since 1915, became law on May 24, 1918, and the transition began from a small and scattered statistical system to one of the most highly developed and fully integrated in the world.

The history of statistics in Canada is a long one. In the days of New France, the clergy kept records of vital statistics, which were made available to posterity for the years 1608 and 1621 in the writings of Champlain and Sagard. In 1666 the Intendent of New France, Jean Talon, took the first systematic census of modern times when he personally carried out a considerable part of the door-to-door enumeration. This form of census was repeated no fewer than 36 times during the French regime.

Changes which followed the cession of Canada to the British in 1763 did not include an improvement in statistics. Census-taking diminished, and did not again assume a regular form until well into the 19th century. By the 1840's however, most of the colonial areas that were to become provinces of Canada had conceived some regular form of decennial census so that by the time of Confederation in 1867 they had all had regular censuses every 10 years since 1851. The first census commissioner after Confederation, J.C. Taché, was in charge of the census of 1871 and 1881. In this role he was responsible for bringing together in Volume IV of the census of 1871, a summary of the results of all the preceding censuses over a period of more than two centuries including the vital statistics of New France.

Statistical activity for the remainder of the century was characterized by the development under various titles of a statistical abstract for Canada (the forerunner of the present Canada Year Book) by the beginning of the census of western Canada in 1886, and by expansion of statistical activities in addition to the census. Until the turn of the century, however, this expansion took place in the departments of government concerned rather than in a central agency, and included such subject areas as banking and insurance, crime, and statistics of merchant shipping, postal services, trade, inland revenue and immigration. The formation of the Department of Labour in 1900 accelerated the development of labour statistics.

Recognition of the need for coordinated development was reflected in the passing of the Statistics Act in 1918 and the establishment of the Dominion Bureau of Statistics. In the years that followed, Dr. R. H. Coats, the first Dominion Statistician, laid the foundations for the present statistical system.

Purely statistical operations in other federal departments were transferred to the new agency. The new Bureau then turned to the task of filling in gaps in the system and creating a coordinated system in areas as basic as vital statistics, external trade and the census of industry. A system of classification of commodities and industries was introduced. Three federal-provincial statistical conferences in 1918 and 1920, on agriculture, education and vital statistics, paved the way for cooperation among levels of governments.

By 1939 a broad national statistical system had been established including comprehensive accounts of the balance of payments.

The greatest effect of World War Two on long run statistical development was the demonstrated usefulness of a conscious economic policy based on a much more sophisticated conceptual and statistical foundation than had previously been tried in Canada.

During the immediate post war period the need for basic improvements and innovation in the statistical system was recognized. In this process the national accounts played a central role by providing an integrated framework for improving and extending economic and financial statistics. Another milestone was the development of operational unemployment and employment concepts and their measurement in a regular labour force survey. Important progress was made in creation and implementation of up-to-date classification systems for industries, commodities and so on.

Significant progress was made in the field of social statistics including education, health, justice, while the census of population, housing and agriculture was modernized.

During the 1960's the demand for statistical services has been stimulated by the pressing needs of royal commissions and new government departments and agencies, and by the need for more provincial and regional data. The role of meaningful information, and of statistics as a particularly useful form of information, in the process of government and private decision making, is now much more clearly understood than ever before. The sharpening of analytical ideas in business accounting, in economic forecasting and in demographic analysis makes it virtually necessary to approach these objectives from a statistical viewpoint. The development of new mathematical methods and the invention of the modern electronic computer have created a huge demand for data, and vast possibilities for their utilization. These circumstances highlight one fact above all others, and this is the necessity for the coordinated and integrated approach to statistics, an approach which lay at the root of the original scheme conceived by Dr. Coats. This structure now exists to a substantial extent, and suggests the pattern of future growth.

Prime Minister Unveils Population Clock at DBS Headqu

Prime Minister Pierre E. Trudeau recently inaugurated an electronic population clock installed in the DBS headquarters building in Tunney's Pasture, Ottawa.

The clock graphically displays the elements in Canada's population growth. The estimated total population, displayed in illuminated figures four inches high, changes as each additional person is estimated to have been added to the population.

To portray the estimated average frequency of births, deaths, immigrant arrivals and emigrant departures, the clock has illuminated moving bars. Two travel upward for births and immigration as additions to the population, the other two move downward to indicate losses.

For births, five lights mounted vertically come on one at a time to completely light up the bar in 1 minute 25 seconds. For immigrants, ten lights come on two at a time, to completely light the bar in 2 minutes and 22 seconds. For deaths, fifteen lights are used, coming on three at a time and lighting up the deaths bar every 3 minutes and 32 seconds. In the emigrant bar, 40 lights coming on four at a time complete this, the longest cycle, in 8 minutes and 35 seconds.

The clock was designed and built by the Canadian Government Exhibition Commission using instrumentation designed and assembled by Levy Associates Co. Ltd. of Ottawa.

New Projects

New Input-Output Tables to be Published Soon

Part I of *Input-Output Structure of the Canadian Economy*, 1961 is tentatively planned for publication by the Dominion Bureau of Statistics later this year. It will be the first of a series which will:

1 provide a quantitative description of the interindustry relationships of the 1961 economy;

2 through formalization of input and output structural relationships, present models of the economy that will provide the basis for very detailed analytical studies.

Analytical Uses of Input-Output Tables

Among the broader types of studies which are facilitated by input-output analysis are estimation of:

1 short and long term projections of changes in outputs of each industry and commodity, and of labour inputs into each industry;

2 the projected effects of the implementation of a particular plan by business or by government and comparative effects of two or more alternative plans;

3 the effects of an anticipated substitution of one commodity by another (e.g. replacement of one kind of fuel by another);

4 changes in import requirements by commodity arising from growth in the economy including situations where there are short-run limitations on domestic production (say capacity) or longer-run restrictions (limited supply of a natural resource);

5 the accumulated indirect tax content, labour content or import content of a particular category of final demand (e.g. of personal expenditure on automobiles).

In addition, a single firm might use the technique as an aid in providing projections of its markets. This would be facilitated by splitting out its individual operations from the industry (or industries) in which it is included in the National Tables on the basis of its accounting records.

Previous Input-Output Table

Over the past two decades, input-output tables have been prepared for many national economies, as well as for regions. The only previous input-output table for Canada to be constructed from basic data was a square (42 x 42) industry system, the revised version of which was published by the Dominion Bureau of Statistics as "Supplement to the Interindustry Flow of Goods and Services, Canada, 1949", Catalogue No. 13-513.

Conceptual Framework of the 1961 Studies

The conceptual framework of the 1961 studies improves on 1949 in two important respects:

1 There is an explicit recognition of the distinction between commodities (goods and services) and industries. Each industry usually has several or many characteristic products on which separate detail is most valuable for analysis. Hence the 1961 worksheet tables are rectangular with more commodities than industries (approximately 190 industries and 650 commodities).

2 An individual establishment – and therefore the industry in which it is included – often produces some commodities which are characteristic of other industries in addition to its own characteristic products. Hence a rectangular output table, separate from the input table, has been constructed to show the structure of commodity outputs by industry.

Analytical Potential of the 1961 Framework

With separate input and output tables, one can make important distinctions in the choice of marketing (output) structural relationships on the one hand, and technological (input) structures on the other. With the detailed rectangular systems, there is great flexibility in choosing a level of aggregation and the appropriate structural relationships to be used in the formulation of input-output models for answering specific questions. Models exist for working with the extra commodity detail. However, one can also aggregate over commodities to derive square tables in which the number of commodity groups is equal to the number of industries.

Publication Plans

In checking the content of the separate input and output tables, it was found that many of the elements are confidential under the Statistics Act and that this situation remains even with considerable aggregation over commodities and industries. It is therefore not possible to publish separate input and output tables of any substantial size. The contents of the publications are necessarily limited by this fact.

Part I will contain the following:

1 a A square dollar value "input-output table" for a 110 industry aggregation.

b A table of the corresponding "direct input coefficients".

c A table of the corresponding "direct plus indirect" output requirements per dollar of final demand (the "inverse matrix").

In effect, each of the tables will combine the input and output relationships, using the following assumptions:

i For a particular industry, each commodity produced has the same input structure.

ii Each industry maintains a fixed share in the total output level of a particular commodity.

2 Three tables, identical in conceptual format to those described above, for a 65 industry aggregation.

3 A set of rectangular input and output tables with something between 10 and 20 industry groups. These will be used to illustrate the analytical potentialities of the rectangular framework.

4 The detailed worksheet classification systems: for industries (relating Input-Output industry groupings to the DBS Standard Industrial Classification); for goods and services (relating Input-Output groupings of goods to the DBS Standard Commodity Classification); the link between these two systems in terms of identifying the principal producing industry of each good and service.

5 The classification systems for each of the published tables in terms of the relevant groupings of the above detail.

6 Although confidentiality requirements preclude publication of much of the worksheet detail, certain commodity totals for a 500 item grouping of goods and services will also be included. The following will be shown for each commodity grouping:

a total domestic output from all industries

b total imports

c total intermediate use by all industries

d total exports

e the total of "all other" final expenditures on the commodity group.

These totals will be at "producers' values". Information on the relevant margins (transportation costs, wholesale and retail margins, indirect commodity taxes) will also be furnished so that valuations at "purchasers' prices" can be obtained.

7 A description of the conceptual framework of the dollar value tables (levels of valuation, routing of commodities, relationship to the National Accounts, etc.) and of the derivation of the tables of coefficients.

In the preliminary 1961 tables, described above, final demand will be broken into only two categories – exports and "all other" – in addition to the import column. Part 2 of the study, which will be published several months after Part I, will contain considerable detail on final expenditures:

Exports – Detail for several important countries or groupings of countries.

Government Expenditure – A breakdown by level of government with additional detail for important industries which are included in the government sector; for example, public hospitals, public education, public administration and defence, will be shown.

Personal Espenditure – Detail on the classes or purposes of personal consumer expenditure corresponding to National Accounts categories.

Gross Fixed Capital Formation – A two column breakdown: expenditure on new construction; expenditure on new machinery and equipment.

Value of Physical Change in Business Inventories – To be shown in a single column.

Part 3 of the publication will contain a detailed write-up on data sources and methods of estimation, and a revised version of the 1961 Tables tying in with the 1961 base period revision to the National Accounts.

Services to Users

It is hoped that a service can be established by which outside users of input-output analysis could make use of the confidential detail contained in the worksheet tables without having access to this information. This would involve the establishment of computer based arrangements at DBS by which the user's particular problem could be presented for solution without revealing confidential structural information. The input-output staff would provide some consulting services to the user on the conceptual formulation of the problem and specification of the data to be used in the appropriate input-output format. Some charge would be made to cover costs of service provided.

Further information on DBS input-output research can be obtained from Mr. P. Pitts, Input-Output Research and Development Staff, DBS, Ottawa.

Automation and Statistical Services

A shift in DBS methodology towards much greater reliance on electronic data processing equipment at all stages of collection and processing of statistical information is accelerating DBS capacity to keep abreast of the demand for increased scope, detail, and timeliness in the production and release of official statistics.

Included in this shift are the construction and maintenance of comprehensive lists of statistical reporting units, sampling from these lists when this is called for, preparing documents for mail-out to respondents and DBS officers in the field, control of follow-up operations on late respondents, editing and processing the incoming data and the statistical output, and the production of printed tables in a form suitable for reproduction in official publications. In addition, plans are being developed for the release of data in machine-readable form, processed to user specifications.

An article in the June 1968 issue of the *Canadian Statistical Review* briefly describes some of the new techniques under development or already introduced in DBS and indicates the direction of change in the collection and processing of statistical information. One aspect of the article dwells upon a geographically referenced data storing and retrieval system. The objective of the system now being developed applies to the coding of data for urban addresses in Canada and the automatic coding of an individual address and the automatic retrieval of data aggregated to arbitrarily specified areas. The "code" assigned is the geographic coordinates of the address expressed in the Universal Transverse Mercator (UTM) System.

Individual re-prints of the article, "Automation and Statistical Services", can be obtained from the Inquiries Section, Information Division, DBS, Ottawa.

Improved Timing of DBS Reports – Progress Report

The measure of quality of a statistical system for economic policy makers is not merely its ability to depict accurately the intricacies of the market system, but as important is its capacity to provide up-to-date information which will permit planners and policy makers to react quickly to changing economic conditions. That the DBS Timeliness Committee is concerned about this fact is best illustrated by improvements in the timeliness of selected DBS services effected during the fiscal year ended March 31. The previous issue of the *Statistical Observer* outlined the aims of this committee.

Monthly Index of Industrial Production

The *Index of Industrial Production* was chosen by the Timeliness Committee as the focal point for its activities because this index is important as a cyclically coincident economic indicator and also because it is a major integrating device within DBS, using such statistics as the monthly employment and payrolls survey and a great many commodity series. The committee decided that the time lag for the Canadian Index of Industrial Production should, as a short run target, be reduced from over 60 calendar days to 45 days or better by March 31, 1968. In fact, the DBS Daily release date dropped from 64 days after the end of the reference month for January 1967, to 40 days for March 1968.

Monthly Employment and Payrolls Survey

The monthly employment and payroll survey was selected to form an integral part of the timeliness programme because that survey provides employment, man-hours and payroll data which are extensively used by government and business as guides for policy decisions. In addition about one-third of the monthly Index of Industrial Production is based on man-hours series. The figures are also used to derive estimates of labour income for purposes of quarterly national accounts.

Aims of the committee with respect to the employment and payrolls survey were described in the previous *Observer*. That the improved timeliness aim was successful is illustrated by the fact that advanced estimates of industry aggregative employment and payrolls data are now being released about one month after the end of the reference month – a gain of four to five weeks. Time elapsed for release of the publication *Employment and Payrolls* was

seventy-seven calendar days in December 1967, a gain of about six weeks over the January 1967 time lag of 121 days. During the same period the time lag for *Man-Hours and Hourly Earnings* was reduced to 80 days from 121 days.

Import – Export

Import-export statistics are among the most sensitive and closely watched series produced by DBS because of Canada's dependence of foreign trade. For this reason and because of the volume of the work required to produce the import series, the committee selected imports for special emphasis. The less voluminous export series will receive the same degree of attention later. Problems to be faced by the committee in dealing with the import-export series were mentioned in the last issue of the *Observer*. A quick measure of the Committee's success to date is possible by comparing the release dates of *Imports by Commodities* for December 1965, 1966 and 1967. The publication was released on May 6, 1966, April 17, 1967 and March 14, 1968.

For the very detailed monthly publication on imports, the release lag for the first few months of 1968 has improved by approximately 7 weeks over the performance of early 1967. For the advance summary statements of import statistics, information was released for March 1968 only 17 days after the end of the month, an improvement of 9 days over last March.

Current Commodity Surveys

In the current commodity survey area, there are approximately 135 monthly surveys, the results of which are used in their own right and as elements in more aggregative series such as the *Index of Industrial Production*. Timing gains have been effected in virtually every series. The most representative overall measure of improvement is that for January 1968, when 50 more surveys than in the preceding year were completed by the 25th working day after the end of the month.

Monthly Retail Trade

One other key economic indicator, the monthly retail trade series, showed an improvement of about a month in terms of issuance of the actual publication.

Current Shipments, Inventories and Orders

The monthly shipments, inventories and new orders series for manufacturing has shown little long-term improvement as yet, although a considerable loss in timeliness in the early part of 1967 has been entirely recovered. As well, groundwork has been laid during the year for a highly automated system which will generate earlier and more reliable estimates.

National Accounts

For the next 12 months, the quarterly national income and expenditure accounts will form the focal point of the timeliness program. At present, the estimates of the national income and expenditure accounts are published about 12 to 14 weeks after the quarter, compared to a much earlier release in the United States. The committee is confident that it can make a substantial start towards narrowing this gap during the present year.

In general, DBS efforts in the area of timeliness are being broadened and intensified with the aim of reaching an irreducible time lag between the period being measured and the release of statistics for that period.

Those interested in obtaining more details on the activities of last year's timeliness effort and program for this year, should contact B. J. Lynch of the National Accounts, Production and Productivity Division, DBS, Ottawa.

New DBS Motor Transport Traffic Survey Under Consideration

Concepts for a new motor transport traffic survey, to replace the one discontinued at the end of 1967, are being developed at DBS.

The previous survey, initiated on a Canada-wide basis in 1957, was undertaken to provide broad national trends relative to the size, importance and competitive significance of the trucking industry in Canada.

Conducted in each province on a quarterly basis by means of a random sample of truck registrations, provincial and national estimates were produced covering four major categories of truck operations – for hire, private, urban, and farm. Detailed information was published on tonnage carried, revenue earned, and various ratios such as revenue per ton mile, percentage capacity utilized, average annual mileage, etc. This information was widely used by economists, market research and consulting agencies, transportation firms, and government departments for a variety of purposes.

During the past ten years, considerable changes have taken place in the trucking industry. For example, developments such as piggyback, containerization and truck interlining have increased significantly. These developments were not covered in the original design of the Motor Transport Traffic Survey. In addition, changes in provincial licensing systems such as reciprocity, installment licensing, 'per trip' licenses, and the conversion of provincial licensing systems to computer affected survey methodology. Coupled with this were the increasing demands made upon DBS to collect origin and destination of truck commodity movements for comparison with other modes of transport and to provide some indication as to the nature and extent of the changing transportation market, both regionally and nationally.

These factors played a major part in the decision to discontinue the Motor Transport Traffic Survey in its present form last year. A major review of the survey completed at that time indicated that a new survey is necessary to cover these changes in the industry and at the same time meet the needs of users for commodity origin and destination data.

In consultation with the Bureau's Sampling and Survey Research Staff, a new two-part survey design is being considered covering truck fleets and individual trucks. The proposed fleet survey would concentrate primarily on commodity, origin and destination data while the individual truck survey would provide information of a general nature such as size, make and model of trucks, annual mileage, nature of operation, etc. The periodicity of both surveys has as yet not been decided, although the latter would likely be on an annual basis only.

Pricing of Service Industries Subject of DBS Study

A study of the special problems associated with pricing in the service industries is being undertaken by Miss B. J. Emery and Mr. J. D. Randall of the Prices Division, DBS. The service industry field constitutes one of the most rapidly growing sectors in the Canadian

economy and one in which the availability of statistics lags behind many other areas. The results of the study will be presented in a paper to be given at the International Income and Wealth Conference in mid-1969.

The study will explore the adequacy of existing classification systems for services, with particular reference to the sort of specifications required for regular pricing purposes, and will examine the suitability of the present macro-economic systems of statistics as vehicles for the integration and presentation of service prices. There will be some consideration of the conceptual problems of measuring output in this field as it affects price index construction, and of the appropriateness of the techniques presently used in adjusting for quality change in the goods field for measuring quality change in services. In addition, the practical problems of when, where and what to price, will be discussed in terms of establishing a program of collection, calculation and publication of service prices.

Information was provided by J. D. Randall, Assistant Director (Industrial Prices), Prices Division, DBS, Ottawa.

Integrated System of Industry and Commodity Price Statistics

A committee within DBS has begun a series of meetings to establish guiding principles and to assist in the preparation of a theoretical framework for an integrated system of industry and commodity price statistics. Under the chairmanship of J. D. Randall, Assistant Director, Prices Division, the committee will consider user needs, conflicts in concepts, feasibility of price data collection, availability of weighting diagrams and problems associated with the meshing of commodity and industry prices data.

The demand for an integrated system of price statistics covering major producing sectors, all important commodities and services, and important levels of distribution, stems from the recognition of the central role played by prices in the production and consumption processes. The need to be able to relate and analyse price data within the same industry classification system as statistics of production, employment and productivity and to be able to construct price indexes relating in concept and definition to widely used macro-economic measures of production and demand, has been frequently voiced. The need will become even more apparent with the development and regular publication of input-output tables requiring comparison of differing time periods.

The framework, initially serving as the basis for the logical development of price statistics, revealing gaps and imposing consistency, will eventually provide a broadly based meaningful set of price indicators which will:

1 be useful in formulating policy relating to fiscal and monetary matters and other specific programs concerned with inflation or deflation;

2 assist in the improvement of the measures of "real" production (i.e. constant price measures of real output by industry of origin;

3 provide a wider range of escalators for long-term business contracts to maintain purchasing power.

Information provided by J. D. Randall, Assistant Director (Industrial Prices), Prices Division, DBS, Ottawa.

Multi-Purpose Area Probability Sampling Used in Farm Surveys

An international project sponsored by the Food and Agriculture Organization of the United Nations to study crop diseases by area probability sampling has been introduced into a survey program being used in southwestern Ontario by the Dominion Bureau of Statistics' Agriculture Division.

The survey program, introduced last summer by the Agriculture Division in cooperation with the Ontario Department of Agriculture and Food, was geared to provide unbiased estimates of various farm characteristics in southwestern Ontario. The division used the multi-purpose area probability sampling approach based on modern statistical concepts. Results obtained from this survey were quite encouraging and the program, which covered 12 counties, has been expanded to include 17 counties this year. Similar sampling techniques will be used for the first time by the Alberta Department of Agriculture in that province's Forage Seed Crop Survey this year. The principal objective of applying this technique is to obtain unbiased estimates and forecasts with known precision and reliability which are not feasible by ordinary non-probability sampling methods. Consequently, the application of area probability sampling, originally started on a pilot basis, is now expanding as rapidly as resources permit to take its place as an important part of the operating program of the Agriculture Division for the purposes of meeting the increasing need of more accurate and timely agricultural statistics in Canada.

Those interested in greater detail should contact Y. S. Hwang, Agriculture Division, Dominion Bureau of Statistics, Ottawa.

Announcing

O. M. Schnick, former Director of the Applied Economic Branch in the Office of Chief Economist, Province of Ontario, was appointed Executive Director of Ontario's Economic and Statistical Services Division.

Douglas Blyth has retired as Director-General of the Economic Accounts Branch, DBS. Mr. Blyth entered service as a Supervising Census Clerk in 1931. In 1934 he joined the Internal Trade Branch where he was associated with early work on the Balance of Payments. Mr. Blyth's career was marked by increasingly important roles as a principal authority on the Canadian Balance of Payments. He became Director, International Trade Division in 1948, Director, National Accounts and Balance of Payments Division in 1962, and Director-General of the Economic Accounts Branch in 1967.

Bower Carty has been appointed Director-General of the Economic Accounts Branch, DBS, succeeding Douglas Blyth. Mr. Carty was formerly Director, Balance of Payments and Financial Flows.

Pierre Boulet, formely Assistant Registrar, the University of Laval, was appointed in March 1968 as Chief, Higher Education Section in the Education Division, DBS, with supervisory responsibility for statistical data on post-secondary education.

Mrs. D. M. Cameron, formerly of the Occupational Research Section of the Programme Development Service, Department of Manpower and Immigration, has been appointed, on July 1, 1968, Chief of the Adult Education Section of the Education Division, DBS, with responsibility for statistics on adult education and libraries.

Miss R. S. Samlalsingh, formerly of the Task Force on Labour Relations, joined the Economic Characteristics Section of the Census Division, DBS, on January 4, 1968.

D. Clifford Evans has been appointed Branch Administration Coordinator, Socio-Economic Statistics Branch, DBS. Mr. Evans was formerly Assistant Director of Planning (Ceremonies), Centennial Commission.

Mrs. Jean Spear, formerly Chief of Training for the Census Division, became Branch Training Coordinator, Socio-Economic Statistics Branch, DBS, on June 12, 1968.

Thomas S. Tuschak has been appointed Chief of the Financial Flows Section in the Balance of Payments and Financial Flows Division, DBS. Mr. Tuschak who has a broad financial background was latterly Manager-Treasurer of the Capital Funds Division for I.A.C. in Montreal. Mr. Tuschak will be mainly concerned with the development and publication of *Financial Accounts*, a macro-economic presentation and analysis of intersectional financial flows in Canada.

John Keller, formerly on the staff of the Eastern Ontario Institute of Technology joined the Prices Divisions, DBS, on June 1 as Unit Head, Goods Producing Industries, Industrial Prices Section. Mr. Keller will be responsible for the development and maintenance of price indexes and related data, with particular emphasis in the immediate future on the Industry Selling Price Indexes, General Wholesale Index, and Prices paid by Farmers and Farm Product Indexes.

Yvon P. Fortin, formerly Acting Chief of the International Prices Section, DBS, is now Chief, Comparative Living Costs Section.

Rowland D. Simpson has joined DBS as Head, Rail Unit, Transportation Section of the Transportation & Public Utilities Divisions, DBS. Mr. Simpson was formerly with the British Railways Board.

Frank Thomas has been appointed Assistant Chief, Quinquennial Census, Merchandising and Services Division, DBS. Previously, Mr. Thomas was a Combines Officer with the Combines Investigation Branch, Department of Consumer and Corporate Affairs.

Laszlo Sonkodi has joined DBS as Chief, Research and Development Section, Merchandising and Services Division.

Dr. Mascell Beckford, formerly Senior Resources Analyst with the Manitoba Department of Mines and Natural Resources, has joined the Comparative Living Costs Section of the Prices Division, DBS.

G. Stewart Simpson has been appointed Chief, International Prices Section, Prices Division, DBS. Mr. Simpson was previously with the Personnel Policy Branch of the Treasury Board.

Marcel Jolicoeur has been appointed Chief of the Mental Health Section, Health & Welfare Division. Formerly, Mr. Jolicoeur was Liaison and Co-ordination Officer in the same section.

Frank Morrow has been appointed Senior Co-ordinator, Crimes Statistics, Judicial Section, Health & Welfare Division, DBS. **Mr. D. N. Cassidy**, the former incumbent, is now Director of Police and Security, National Harbours Board.

J. L. Forsyth retired from the Government Service on February 23, 1968, after serving for 38 years. Mr. Forsyth started his service in 1938 as Assistant Superintendent of the Dominion Experimental Farm at Nappam, N.S. He joined DBS in 1941 as a statistician in the Census of Agriculture and progressed to Chief of Agriculture Census, and, in 1952, to Assistant Director of the Census Division. He was Senior Assistant Director, Administration, in the Division when he retired.

Jacques G. Gagnon, Co-ordinator, Provincial Liaison and Consultative Services, has accepted a post with the United Nations and has left the Bureau for a period of two years for Algeria, where he will act as Technical Advisor to the Algerian Bureau of Statistics.

Pierre Gadbois, Head of the Montreal Regional Office for Special Surveys Division, DBS, has accepted the position of Regional Director of the Manpower Directorate in the Department of Labour for the Province of Quebec.

Frank T. Denton, Director of the Econometric Research Staff in the Integration and Development Branch has left DBS to assume the duties of a professor in the Department of Economics at McMaster University in Hamilton, Ontario.

Conferences

Population Association of America —Annual Meeting

Four papers dealing with mortality, fertility and migration were delivered by Canadians at the Population Association of America annual meeting in Boston, Massachusetts, April 18-20. The papers, all presented in a special session on Canadian population trends, were, "Recent Trends in Canadian Mortality", by Dr. M.V. George and W. Zayachkowski, Dominion Bureau of Statistics; "Recent Trends in Canadian Fertility", by Dr. Jacques Henripin, University of Montreal; "Economic Aspects of Recent Provincial Differentials in Migration", R.M. McInnis, Queen's University and "Some Findings from the Canadian Family Growth (Toronto) Study", by John Kantner, T.R. Balakrishnan and J. Allingham, University of Western Ontario. Dr. Leroy O. Stone of the University of Western Ontario and Demographic Consultant for DBS chaired the session.

The paper, "Recent Trends in Canadian Mortality", surveyed the trends and patterns of mortality in Canada during the 1926 to 1966 period and examined some of their implications for mortality projections. Canada has had a crude death rate of less than 12 per 1,000 population since 1926; the crude rate registered a fairly steady decline up to 1954. After 1954, despite the advances in social and medical care, the trend in death rates has been fairly stable for both sexes; the annual crude death rate declined from 8.2 to 7.5 during 1954-1966. The farily stable trend in the death rate in recent years may not be surprising because it is obviously impossible for the death rate to decline indefinitely. Further, with an aging population, the percentage of population for the age group 70 and over in Canada increasing from 4.7 in 1951 to 5.0 in 1966, it is possible for the death rate to increase even if there is no change in the age-specific death rates. In this context, a number of questions may be asked on the future course of mortality;

1 Has Canada reached the irreducible minimum level in the death rate?

2 Is the recent stable trend in the death rate a temporary phenomenon or does it indicate the starting of a new trend with the prospect of an eventual increase in mortality?

3 What implications do recent mortality trends and patterns have on future population growth and life expectancy?

Among the countries which have fairly reliable vital statistics, Canada's crude death rate, (7.5) is one of the lowest. Of such countries, Japan (6.8), U.S.S.R. (7.3) and Poland (7.3) had lower death rates. If the comparison of death rates is made between West European and English-speaking countries elsewhere, Canada had the lowest crude death rate in 1966. However, where a 1960 comparison was made using age-adjusted death rates, for each sex the lowest death rates were found in Norway, with the Netherlands a close second; and Canada ranked either seventh or eighth.

Like the crude death rate, there has been a slackening in the fall of infant mortality rate in most of the other countries of low mortality during recent years. The largest change in the rate of decline occurred in New Zealand and the infant mortality rate there (20.4 in 1962 and 17.7 in 1966) has been practically stationary over the past few years. On the other hand, in Sweden, Finland, and the Netherlands, where the infant mortality rate is the lowest (12.6, 14.4 and 14.7, respectively, in 1966) the annual rate of decline was the highest in recent years compared with other countries of low mortality. In view of these changes in other countries with low mortality and in view of the fact that in countries such as Sweden and the Netherlands the infant mortality rates are about 13 to 15, a further decline in the infant mortality level may be expected in Canada. In 1966, eleven countries of the world had lower infant mortality rates than Canada. Canada's infant mortality rate during 1966 was 23.1.

The analysis indicates that there has almost been a levelling off of the decline in death rates in recent years, particularly after 1954, which may be explained by a combination of two sets of factors acting against each other. The first is the dramatic drop in the death rate for the diseases of infectious and parasitic origin which lost much of its impetus in the 1950's. As a result, the share of deaths from diseases of infectious origin on the death rate became negligible in the recent years. Secondly, the so-called "new diseases" such as cardiovascular-renal diseases, cancer, and motor vehicle accidents have become the main causes of deaths, particularly for middle ages and old ages. Because of the aging of the population the diseases common in the adult population may have more effect in bringing about the deceleration of the rate of decline of the death rates. Hence, future trends in mortality depend to a great extent on controlling these deseases. According to a study by B. Woodhall and S. Jablon, the largest increment in life expectancy would come from the elimination of cardiovascular diseases as a cause of death.

On the question of whether Canada has reached the irreducible minimum death rate. the examination of the death rates by sex, age and cause of death indicates that further declines are possible. Also, comparison of the death rates by age and sex for various countries of low mortality around 1963 and for the provinces of Canada shows that the current death rate for Canada as a whole is not the lowest. Although Canada has the lowest crude death rate among the countries of Western Europe and English-speaking countries elsewhere, these countries had lower death rates in a number of ages for both males and females. Further, there are a number of countries in Europe and Oceania with infant mortality rates below or around 20 per 1,000 live births. It may also be possible to reduce the disparity between the male and female death rates in Canada. Another point in favour of a further decline in mortality is that the current mortality level in Canada is higher than the expected lowest level indicated in a study by J. Bourgeois-Pichat, who arrived at mortality limits by measuring mortality strictly of a biological nature through the extrapolation of trends noted in different countries. The expectation of life at birth on the basis of these mortality limits was 76.3 years for males and 78.2 years for females. Considering these factors, it may be reasonable to expect that Canada's mortality rate, unlike that of the U.S., will reach a level somewhere near the lowest level recorded in countries of Europe and Oceania and the provinces of Canada or a level near the biological limits, within a few years.

The first of two fertility papers, "Recent Trends in Canadian Fertility", dealt with the changing Canadian fertility pattern. Since the war the age structure of married women has been conducive to a high fertility rate. The drop in crude fertility rates is mainly due to changes in marital fertility in recent years. A contrast was shown between two indexes of fertility – cohort fertility and period fertility. Three factors account for the excess of period over cohort fertility rates since 1945: the catch-up in marriages

following the war, the lowering of the marriage age, and the reduction in the birth interval. A rough measure estimates that the 0.6 excess of period fertility rate over cohort fertility rate was due to an advance of 2.2 months per year in the child-bearing time schedule – 1.2 due to the lowering of the age at marriage and 1.0 due to the reduction in birth interval. One author expects the completed fertility of married women to fall from 3.3 children to 2.6 within the next 30 years.

The second fertility paper "Some Findings from the Canadian Family Growth (Toronto) Study", is the result of a sample survey of contraceptive methods in Toronto. Each 100 questionnaires received were processed separately as a sub-sample and there was a high degree of consistency between the sub-samples suggesting that the sample, as a whole, was a reliable one. The survey shows that "the pill" is the most important method of contraception. The study also cross-classifies methods of contraception by education, religion and previous methods of contraception.

The fourth paper, "Economic Aspects of Recent Provincial Differentials in Migration", dealt with the relationship between male earnings by province and inter-provincial migration. In his conclusions, the author suggested that the continued high percentage of males in the 15 – 19 age group, in certain losing provinces, will be reflected in continued out-migration since these provinces can not supply the needed jobs to keep them.

J. Silins and W. Zayachkowski of the Dominion Bureau of Statistics presented the papers at the Vital and Health Statistics section meeting.

"Life Expectancy Eliminating Certain Causes of Death, Canada, 1960-1962" by J. Silins considered life expectancy at birth if each of cardiovascular diseases, cancer and accidents were eliminated as a cause of death. If cardiovascular diseases were eliminated as a cause of death during the above period, then male babies born in 1961 could expect to live an additional 11.36 years and female babies an additional 12.88 years. The corresponding figures for cancer are 2.27 and 2.62 and for accidents, 1.86 and 0.75, respectively.

"Cancer Mortality in Canada, 1961: An Urban-Rural Comparison" by W. Zayachkowski presented a comparison of six main types of cancer mortality for urban, semi-urban, and rural areas of Canada by province for the year 1961. Most forms of cancer mortality were above the national level in the urban areas and below the national level in the rural areas. Exceptions were female cancer in rural Québec, stomach cancer in rural Newfoundland and rural Québec, female cancer of the intestine in rural Nova Scotia, and female genito-urinary cancer in rural Québec; mortality in all these cases was significantly above the national level.

Enquiries concerning these two papers should be addressed to the authors in the Vital Statistics Section, Health and Welfare Division, DBS, Ottawa.

Canadian Public Health Association Annual Meeting

Totem Park Complex at the University of British Columbia was the location of the 1968 Annual Meeting of the Canadian Public Health Association, held May 6-9. This year's annual meeting consisted of three general sessions, as well as numerous section meetings and several business meetings.

The general sessions included the following addresses: "Planning Health Services – Substance versus Form" by M.I. Roemer; "Imported Exotic Diseases – Where Have You Been" by C.J.G. Mackenzie, D.M. McLean, and W.E. Shepherd; "Social Sciences and Public Health Programs" by D.O. Anderson, A.L. Knutson and A.P. Ruderman; and "Responsibilities of Voluntary Agencies Today" by Floris King.

Federal-Provincial Committee on Labour Statistics – 1968 Meeting

The annual meetings of the Federal-Provincial Committee on Labour Statistics have proved to be valuable vehicles for the Dominion Bureau of Statistics and for the various provincial statistical agencies to discuss their progress over the past year, to talk about new plans, and discuss mutual problems. The meeting this year was held at DBS on May 16.

The reports of the various provincial delegates showed that the collection of occupational and wage rate data was of general concern. Nova Scotia, New Brunswick and Ontario are all conducting surveys in this area and other provinces expressed keen interest. It was pointed out by several provincial delegates that the kind of studies that were being undertaken in the provinces were of a basic nature required to fill long standing gaps in labour statistics in Canada. The Ontario delegate expressed the feeling that such surveys could be more properly carried out at the federal level leaving provincial statistical bodies to perform more limited, special-purpose surveys.

Partly as a result of new survey work they are undertaking, many provinces expressed an interest in receiving lists of establishments for mailing purposes from DBS, coded by size of firms on the basis of number of employees. While lists are now currently available to provinces on request, the Statistics Act at present prevents any disclosure of the size of an establishment.

Among the items prepared by DBS for the meeting were:

1 A report on recent anticipated improvements in timeliness in the production of monthly employment, hours, and earnings data from the large firm ES-1 Survey was presented by P. R. Hicks. Various operational changes cut the time taken for the first release of monthly data from almost 80 calendar days in early 1967 to about 35 days in 1968. A new computer program is being developed which will result in further improvements during 1969 and 1970.

2 Recent progress in the automation of the small firm employment survey (ES-2) was described by W. A. Campbell and A. B. Sunter. The new system results in many operational advantages, including a gain of some 20 days in timeliness, better quality data, and an increase in the amount of data publishable. In addition, the project has proven the feasibility of operating a fully automated sample survey and has prepared the way for similar systems elsewhere in DBS.

3 Mr. Campbell also reported on the developments in the new survey of Employer Labour Costs. The purpose of the survey is to provide information regarding the composition of the wage package and in particular to measure for the first time the value of non-wage items such as holiday pay, employer contributions to private pension plans, etc. Data from the first survey collected in 1968 will be published this autumn. This report stimulated considerable discussion indicating provincial interest in the uses of labour costs data. A number of suggestions from provincial delegates for

future inclusions in the survey were made.

4 Mr. F. Curry reported on the developments of the job vacancy program. A major activity has been to define and locate the sources of information from which the job vacancy data will be collected. This has proved to be a large task which has necessitated setting up an entirely new reporting structure across Canada. At the end of the present experimental period in March 1969 it is expected that estimates of job vacancies at the sixth-digit DOT-3 occupational level will be available for manufacturing in Canada. The data will consist of three month moving averages of: total current vacancies, full-time current vacancies, full-time current vacancies that are vacant more than one month, and future starting date vacancies by length of time elapsed to starting date.

5 Mr. N. L. McKellar reported on the development of the Canadian Classification and Dictionary of Occupations. The classification consists of 19 major groups broken into about 88 minor groups and finally into about 400 units. Work on the classification will be completed in time for the 1971 Census.

Other reports were given by Mrs. S. Ostry, who outlined recent developments in the program of manpower research in Special Manpower Studies and Consultation Division of DBS, and by W. A. Nesbitt who outlined some of the activities of the Special Surveys Division over the past year.

Copies of the minutes of this meeting can be obtained from the secretary, P. R. Hicks, Labour Division, DBS, Ottawa.

Canadian Council on Urban and Regional Research

"Trends of Migration to Metropolitan Centres" was the topic of a paper presented by Dr. Leroy Stone at a research seminar sponsored by the Canadian Council on Urban and Regional Research May 30-31 at the Inn on the Park in Toronto. Seminar topic was, "Drift to the Metropolis".

Dr. Stone, Demographic Consultant to the Dominion Bureau of Statistics, stated that the literature on migration in Canada has given insufficient emphasis to the streams flowing among urban centres. Taken together, these streams must have assumed considerable volume several decades ago, and today they are clearly more important than the well known rural-urban migration streams. Particularly prominent are streams flowing into or out of the Census Metropolitan Areas. For several decades the share of Canadian population within the regions of metropolitan area development has been increasing steadily. These regions have been enjoying much higher net migration ratios than the urban population as a whole; and migration has clearly been of major importance in what we may call an explosion of metropolitan area population in Canada. This population (assessed for a constant geographical area) grew twice as fast as the whole Canadian population for 1901 to 1961.

For the 1956-61 period; at least 69 percent of the inter-municipal migrants moved into, out of or within Census Metropolitan Areas. Three quarters of the internal in-migrants to metropolitan areas come from other metropolitan areas or from other urban areas. Thirty-four percent came from other metropolitan areas. Forty percent of the out-migrants from metropolitan areas went to other metropolitan areas; and another 33 percent went to other urban areas.

In regard to some basic aspects of demographic composition, the migration ratios for females were slightly higher than those for males. The age profiles of migration ratios showed prominent peaks in the usual places – marked by the main ages of family formation and labour force entry, and the early ages of working life.

The streams of migration into and out of metropolitan areas are also distinctive in their socio-economic composition. Generally, they show much higher levels of educational attainment and occupational skills (in various age groups) than the other migration streams in Canada.

Three research questions – two dealing with the effects and causes of metro concentration and the third with the implications for public policy – were also considered during the seminar. Moderators were, Jean-Marie Martin, President, Conseil Superieur de l'Education, Quebec; Vice-President, C.C.U.R.R.; Baldur H. Kristjanson, Deputy Minister, Manitoba Development Authority, Winnipeg, Member C.C.U.R.R. and Philip White, Dean, Faculty of Commerce & Business, University of British Columbia, Vancouver.

Other participants in the seminar were: Alan Armstrong, Executive Officer of the C.C.U.R.R., Ottawa; Ruben Bellan, Professor of Economics, University of Manitoba, Winnipeg, Member, C.C.U.R.R.; Alistair Crerar, Atlantic Development Board, Ottawa, Member, C.C.U.R.R; Peter Honey, Director of Economic Planning, Department of the Provincial Treasurer of Ontario, Toronto; J.T. Blair Jackson, Director of Public Relations, Canadian Association of Real Estate Boards, Toronto; Baldur H. Kristjanson, Deputy Minister, Manitoba Development Authority, Winnipeg, Member, C.C.U.R.R; Harry N. Lash, Superintendent of Comprehensive Research, Montreal City Planning Department, Member, C.C.U.R.R; John MacD. Lecky, Chairman, Vancouver Town Planning Commission, Past President, Downtown Business Association, Director, Sun Publishing Co., Vancouver.

Jean-Marie Martin, Président, Conseil Supérieur de l'Education, Province of Québec, Member, C.C.U.R.R; Victor J. Parker, Executive Director, Lower Mainland Regional Planning Board, New Westminster, B.C; François Poulin, Directeur Technique, Conseil d'Orientation Economique du Québec; Michael Ray, Department of Geography and Planning, University of Waterloo; Mrs. Helen Salisbury, Chief, Population and Manpower, Dept. of the Provincial Treasurer of Ontario, Toronto; Leroy O. Stone, Demographic Consultant, Dominion Bureau of Statistics, Ottawa; Philip White, Dean of the Faculty of Commerce & Business, University of British Columbia, Vancouver; W.A. Willson General Manager, Metropolitan Toronto Industrial Commission.

Canadian Sociology and Anthropology Association Annual Meeting

A special census session covering development of plans for the 1971 Census of Canada was included in the annual Canadian Sociology and Anthropology Association meeting at the University of Calgary, June 6 and 7. Professor J. Kantner of the Department of Economics and Sociology at the University of Western Ontario chaired the session.

Five papers were presented by D.B.S. representatives D. L. Ralston and Dr. I. P. Fellegi. Mr. Ralston dealt with three papers prepared by census subject specialists on (a) general demographic characteristics, (b) economic characteristics and, (c) housing,

household and family characteristics. A paper entitled, "Computer Methods for Geographical Coding and Retrieval of Data in the Dominion Bureau of Statistics, Canada", was presented by Dr. Fellegi. Details of the paper were described under Conferences in the last issue of the *Statistical Observer.* The fifth DBS paper, also presented by Dr. Fellegi, covered the testing program for Canada's 1971 Census. This paper is also described in the previous Observer.

In the first paper dealing with the development of census content on general demographic characteristics, prepared by F. G. Boardman, Chief, General Population Section, Census Division, it was brought out that Canadian censuses, as in those of most countries, include questions on certain standard subjects of demographic and social significance - e.g., sex, age, marital status, fertility, birthplace, language, education. Some 22 questions on demographic and social characteristics were included in the Census of 1961.

Additional questions are being tested for possible inclusion in the 1971 Census. A number of these proposed new questions are in the subject field of education, where more information is needed on types and levels of education, as well as some measure of the amount and kinds of vocational training received. Other new questions being considered have to do with such topics as the birthplace of parents, the language the person most often speaks at home, the date of birth of the last born child (for ever-married women), the length of continuous residence in present dwelling and municipality, and the number of inter-municipality moves made in the past 5-year period.

A major change in the method of collecting age data is being tested - i.e., from a question on age at last birthday to a question on date of birth. The latter approach is considered to have some important advantages, especially if self-enumeration techniques are employed more widely in the next census. At the same time, it is felt that a general census is not a suitable vehicle for collecting reliable data on physical disabilities. Data on past war service has lost much of the urgency that it once had. Therefore, questions on these items may be excluded from the 1971 Census. Finally, consideration is being given to the feasibility of enlarging the list of subjects for sampling in 1971 to embrace most of the items in the demographic and social field, except for such basic subjects as household relationship, sex, age, and marital status.

In the second paper on the development of content relating to economic characteristics prepared by T. G. Beynon, Chief, Economics Characteristics Section, Census Division Mr. Ralston reported that the term "economic characteristics" is used to describe all census statistics pertaining to income and to the size and structure of the Canadian labour force. In the post-war period, information on the economic characteristics of the population has been collected in each of the decennial censuses, and has included details concerning labour force status, occupation, industry, class of worker, hours and weeks of work, and wage and salary earnings. In 1961, the scope of the income enquiry was extended to include income from sources other than wages and salaries.

New economic topics are being suggested for inclusion in the 1971 Census. Some of these topics such as "net taxable income" are rejected because of their sensitivity and their potential prejudice to the entire census operation. Others such as consumer expenditure patterns or job mobility are rejected because of their impracticality in a general census, or because of the large number of questions required to elicit meaningful data. On the other hand, those topics which do appear to fall within the census framework are subjected to a rigorous program of testing and evaluation and are finally ranked in order of priority for inclusion in the questionnaire. In addition, the "traditional" economic topics are reviewed prior to each census to ensure that their continued presence in the document is justified. The evaluation program for the 1971 Census is by no means complete, but present indications are that 11 economic questions included in 1961 will be retained, and, in addition, a question may be added on each of the subjects of multiple job holding, place of work, and net farm income.

Finally, it might be noted that the conceptual basis for information on economic characteristics has undergone little change since 1951. However, the program of planning and development ensures that definitions and classifications are continually improved in order to permit a more effective realization of the basic concepts. For example, one of the most important features of the 1968 testing program is to evaluate the effectiveness of alternative questions to derive optimum measures of labour force participation (employment and unemployment).

The first housing census of Canada, reported Mr. Ralston in reference to the third paper prepared by Miss M.F. Woddell, Chief, Housing and Family Section, Census Division, was taken in 1941 as part of the national decennial census program of that year. It was repeated in 1951 and 1961, the sample size being increased to 20% of all dwellings across the country, as compared to a 10% sample in 1941. Initial plans call for a 25% sample in 1971 with possibly a few basic topics (tenure, type of dwelling, number of dwelling units in building) asked for every dwelling. As in the case of population censuses, attempts have been made over the years to obtain housing information which not only provides useful basic data to users in Canada, but which is modified to reflect changing times, and finally to conform as nearly as possible to international recommendations.

Considerable time and effort have gone into a study to determine the current terminology to describe various structural types of dwellings and its variations throughout Canada. Additional questions relating to business premises in the building, and on number of dwelling units in the building, are expected to further refine the statistics on dwelling types. Testing of questions related to the number of "converted" dwellings have not been successful, chiefly due to difficulties of respondents in understanding the concept and poor response arising from the fact that tenant respondents to whom they chiefly apply often do not know the information required. Among the proposed changes in other subject areas of the housing census are attempts in the testing program to obtain more precise data on rentals including some indication of the extent to which subsidized rents affect the rental picture, and in answer to considerable demand relating to vacation (or second) homes, two questions are included on this subject for testing purposes.

The household forms the basic unit of enumeration for the census, and with the introduction of self-enumeration methods, problems have been encountered in tests to date, particularly in downtown areas where

it is sometimes difficult to determine the household correctly in pre-listing operations. Thus, it becomes all the more necessary to tie households closely to the inquiry on type of dwelling under this approach. The determination of the family unit is also derived from the enumeration of the population questionnaire, from which the relationships of individual household members are grouped into family units. In order to maintain essential comparability, the same census family concept (conjugal family nucleus) which has been used since 1936 will again be applied, with certain tabulations on the broader concept (all related persons in the household) being made for special needs.

Dr. Leroy O. Stone of the University of Western Ontario and Demographic Consultant for the Dominion Bureau of Statistics chaired a session on "Differentiation and Stratification in Metropolitan Areas". This session heard two papers. The first by Anthony H. Richmond of York University was titled "Ethnic Origin, Occupational Status and Income in Metropolitan Toronto". The second, by T.R. Balakrishnan and George K. Jarvis of the University of Western Ontario was titled "Socio-Economic Differentiation in the Metropolitan Areas of Canada". Utilizing the 1961 Census data on occupation, education and income, a combined socio-economic index was constructed for each census tract in the metropolitan areas. From the socio-economic profiles thus obtained for the metropolitan areas, relationships between socio-economic differentiation and other factors like functional specialization, age of the place, and distance from the centre were examined.

Other sessions at the annual gathering were: Canadian Indian and Eskimo Communities; Party Politics; Medical Sociology; Experimental Sociology; Differentiation and Stratification in Metropolitan Areas; Deviance and Values; Community Development; Theory; Family, Schools and Behavior, Religion, Ethnic Problems, Societal Development; Roles and Occupations; Demography and Population.

Eighth Federal-Provincial Conference on Municipal Finance Statistics

The Second Session of the Eighth Federal-Provincial Conference on Municipal Finance Statistics was held in Toronto, June 12 - 14.

The Conference is concerned initially with incorporating suggested changes in the Municipal Finance Reporting Manual. The manual, published by Dominion Bureau of Statistics, covers financial statements of municipal corporations, municipal accounting terminology, general municipal statistics and financial statements of municipal superannuation funds. It also sets out accounting statements approved for use by municipal corporations, with classification of items.

The first edition of the manual, reflecting the work of the First, Second and Third Conferences of 1937 and 1940, was published in 1942. The second edition, published in 1950 stemmed from the work of the Fourth and Fifth Conferences of 1947 and 1948 while the Third Edition, published in 1960, resulted from the Sixth and Seventh Conferences of 1953 and 1958.

The need for the new edition, to reflect developments since 1960 in organization, financial responsibilities and the economic impact of local goverments was established at the 1966 Conference on Municipal Finance Statistics held at Queen's University.

Recommendations contained in *Governmental Accounting, Auditing and Financial Reporting*, published recently by the Municipal Finance Officers Association of the United States and Canada, will be fully considered in developing the new manual edition. This association publication was prepared by the National Committee on Governmental Accounting.

Emphasis will also be given to the provision of statistics, through local government finance reporting, in forms comparable with existing forms, or those planned, by federal, provincial and territorial governments.

The Eighth Conference is a continuing one, meeting twice a year, and is convened by the Dominion Bureau of Statistics with representation from provincial and territorial departments of Municipal Affairs and Quebec Bureau of Statistics. Observers from the federal Department of Finance, the Bank of Canada, and other provincial departments also participate.

The First Session, convened in Victoria, B.C. in April 1967, attempted to identify basic problem areas for study and to establish procedures.

In Toronto the Conference considered proposals for revised expenditure classification systems by function and by object.

A Third Session, to be held in Fredericton, New Brunswick starting November 6, 1968, will complete the expenditure classification study and also review existing revenue classifications.

Conference chairman is George A. Wagdin, director general of the DBS financial statistics branch.

In the Provinces

Ontario

Early in 1968, the office of the Chief Economist of Ontario was reorganized and integrated into the Department of the Provincial Treasurer. The structure of the new economic wing in the Treasury Department (Finance and Economics) is comprised of two major divisions: the Policy Planning Division and the Economic and Statistical Services Division.

As part of the latter division in the new organization, the primary role of the Ontario Statistical Centre will be to supply the specific statistical information required for policy planning and economic analysis. In addition, the centre will provide, as directed by the Treasury Board, a coordinating function upon the statistical activities conducted throughout the Ontario Government services and associated agencies.

Newfoundland

The Statistics Branch of the Economics and Statistics Division, Department of Finance, has been very active since its inception on October 1, 1967. Since the last issue of the *Statistical Observer* the branch has spent considerable time on the preparation of economic and financial data for use in budgetary decisions and for inclusion in both the budget and throne speeches. Currently, most efforts are being directed towards the completion of an historical statistical review of Newfoundland and Labrador. The review will contain approximately 200 statistical tables and will cover about 25 subject areas with particular emphasis on the government finance area.

The Statistics Branch is supplying statistics to the Economics Branch of the Department of Finance and other government departments. The Branch is also providing technical assistance to the Tourist Development Office of the Department of Economic Development which is now establishing a statistics unit within its operation.

New Publications

Facts on Alberta's Population and Economy

The Alberta Bureau of Statistics has published the 1968 edition of *Alberta Industry and Resources.* This publication, consisting of maps, tables, graphs, and narrative is a collection of the most up-to-date and relevant data pertaining to the industrial development of Alberta.

Also published was a study entitled *Purchases of Selected Raw Materials and Supplies by Alberta Manufacturers.* This report presents a list of materials purchased by Alberta manufacturers, which materials it is hoped can be provided by other Alberta manufacturers.

This Bureau has now completed a forecast of population to the year 1986. Entitled *Population - Alberta 1961 and 1966 Forecast 1971 - 1976 - 1981 - 1986* it presents a population breakdown by sex and single years of age for Alberta to 1986.

The population projection is based on the Dominion Bureau of Statistics publications:

1 *Population by Single Years of Age, 1966*
2 *Regional Life Tables, 1960 - 1962.*

Conference on Government Information Systems Published by Economic Council

Rapid escalation in government needs for more and better information and analysis as a basis for policy formulation, implementation and appraisal has resulted from a substantial increase in the relative scope and importance of government. Dramatic possibilities for helping to meet these needs arise from swiftly expanding capabilities for developing computer–based information systems.

So, in effect, says the foreword to *Conference on Government Information Systems,* published by the Economic Council of Canada. The volume comprises mainly an edited collection of addresses to a closed conference, by men experienced in the concept, potential and problems associated with computer programs designed to store, retrieve and organize economic and social information to be used for many important aspects of analysis relevant to good decision - making. The main objective of the Economic Council of Canada in sponsoring the conference was to clarify for senior government officials these basic concepts, potential

and problems, and to describe some of the information systems now in operation.

The conference concentrated particularly on a single type of system having several important characteristics: first, it should be primarily designed to deal with economic and social statistics collected almost entirely by DBS. Second, the data should be mainly time series relevant for use by economists and other scientists in appraising economic and social issues, problems and practices. Third, it should be designed to facilitate the compilation, manipulation, analysis and publication of these statistics far more efficiently and at lower cost in terms of both manpower and financial resources than other methods of handling such data.

The 140-page book presents eight papers, and the moderator's summary of a panel discussion. As well, there is a five page forward by Arthur J. Smith, Chairman, Economic Council of Canada.

Papers presented are:

1 *The Administrator and the Computer: Rights and Responsibilities* by M.H. Schwartz, Vice-President, First National City Bank, New York;

2 *The Bureau of Labour Statistics Data Bank and Information System* by Rudolph C. Mendelssohn, Chief, Division of System Development, Bureau of Labour Statistics, Washington;

3 *The Current Canadian Time Series Data Bank* by H.J. Adler, Director, National Accounts, Production and Productivity Division, DBS, Ottawa;

4 *The Problems of Hardware and Software or How You Can Learn to Live with The Computer* by Aaron Drutz, Manager, Army Applications Department, System Development Corporation, Washington.

5 *The Bureau of Labour Statistics Computer Language for Quantitative Economic Research* by Rudolph C. Mendelssohn;

6 *Data Administration in an Information System* by M.C. McCracken, former member of the staff of the Economic Council of Canada;

7 *The Information System as a Tool for Economic Analysis* by George Sadowsky, Director, Computer Center, Brookings Institution, Washington;

8 *The Need for Information Systems as a Tool for Better Government* by Ronald S. Ritchie, Director, Imperial Oil Limited;

The Conference moderator was T.J. Vander Noot, member of the Economic Council of Canada and an advisor to DBS.

"Conference on Government Information Systems", is available from the Queen's Printer, Ottawa, or at Canadian Government bookshops, Catalogue EC 22-1168, $1.50.

Special Labour Force Studies

Three new publications in the series of the Special Labour Force Studies are being published during the summer months. All are in the non-technical series which is designed to provide an insight into the operation of the Canadian labour market to as wide an audience as possible. Previous studies in this series were described in the last issue of the Statistical Observer.

Labour Force Characteristics of Post-War Immigrants and Native-born Canadians 1956-67, by N. H. W. Davis and M. L. Gupta, compares these two population groups with respect to their age, sex, marital status, place of residence and education, and attempts to see to what extent differences between the two populations in these demographic and social characteristics explain differences in their labour force participation rates.

Educational Attainment in Canada: Some Regional and Social Aspects, by M. D. Lagacé, examines regional differences in the educational attainment of the population, the relationship between inter-regional migration and education, and inter-generation changes in educational attainment.

Women Who Work, Part II, by J. D. Allingham of the University of Western Ontario and the Australian National University, and B. G. Spencer of McMaster University, examines the relative importance of age, education of the wife, education of the husband, child status and residence as factors influencing the participation of married women in the labour force.

These studies are prepared under the direction of Dr. Sylvia Ostry.

Further information concerning these publications can be obtained from Dr. S. Ostry, Director, Special Manpower Studies and Consultation, DBS, Ottawa.

Voluntary Group Stores Subject of New DBS Reports

The second of two "first-time" reports on voluntary group activities in Canada will be published shortly by the Merchandising and Services Division of DBS. The first report, dealing with the grocery and combination trade over the three-year period 1963-65, was released in March 1968 (DBS Catalogue No. 63-215). The second will provide a detailed statistical analysis of voluntary group activities in a number of other trades, including drugs, hardware, general merchandise, auto accessories and variety stores, during 1964 and 1965.

Voluntary groups have been defined for the surveys as: "A type of affiliation in which the relationship between a wholesaler and retailer is described in a formal written agreement. Such agreements usually provide a participation in group advertising activities and for the use of group signs or symbols by member-retailers. In addition, retailers may obligate themselves to do such things as to promote the sale of private brands furnished by the wholesaler, concentrate a substantial portion of their purchases with the sponsor, use standardized accounting systems, and cooperate in the sale of advertised merchandise at stipulated prices for the period covered by the advertising. For their part, wholesalers - in addition to providing all the regular wholesaling services - may agree to provide merchandising advice, assist in store modernization, furnish merchandise for use as sales leaders, prepare advertising and sales promotion campaigns and provide uniform accounting systems and services for the members".

The main table in the two publications is devoted to an analysis of number, and sales of voluntary group stores by kind of business, by province and by "purchase factor". Purchase factor represents the degree to which affiliated stores patronize their group suppliers, expressed in percentage terms. Other tables provide details on voluntary group stores (number and sales) by type of wholesaler and by size of group.

An interesting feature of the second report is the reconciliation which it contains for stores affiliated with food wholesalers, whether in the grocery and combination trade or in other kinds of business, i.e., general stores, confectionery stores, fruit and vegetable stores, meat and fish markets, etc.

The collection of data on voluntary group stores was accomplished in three general stages:

1 The names of voluntary group wholesalers and suppliers were obtained through a

special survey undertaken in conjunction with the 1961 Census of Merchandising and Service Establishments.

2 Details of voluntary group membership lists were then supplied by these wholesalers on written request.

3 Information on sales and purchases was obtained directly from the voluntary group members. Respondents were also asked to supply details of their group operation (advertising and display of group identification).

Voluntary Group Stores - Grocery and Combination Trade 1963-65, Catalogue No. 63-215, (50¢), is available from the Publications Distribution Unit, DBS, Ottawa. Voluntary Group Stores - Selected Trades, Catalogue No. 63-217, (50¢), is available as of early August.

Price Indexes of Electrical Utility Construction

Those concerned with electric utilities or with the development of price indexes for capital expenditures, will be interested in the publication *Price Indexes of Electrical Utility Construction, 1956-65.*

The publication introduces a new series of annual input price indexes which measure the movement through time of materials, labour, and equipment used in the construction of some electric utility distribution systems, transmission lines and stations in Canada. The index provides an estimate of how much more, or less, it would cost to reproduce the base-period program of construction in another period, using the same construction technology as in the base period (1961) and assuming rates of profit and productivity in construction to be the same in both periods.

Descriptions of methodology, problems encountered and definitions used in preparing these indexes are included in the report. Uses and limitations are also covered. Annual indexes from 1956 to 1965 are presented in the report; subsequent indexes will be published in *Prices and Price Indexes*, DBS Catalogue No. 62-002.

Price Indexes of Electrical Utility Construction marks completion of the first stage of development of indexes covering total expenditure on electric utility construction. Indexes for hydro-electric generating stations and for steam-electric generating stations are now being developed. Throughout the development of these indexes, DBS has received the close cooperation of the Canadian Electrical Association.

Price Indexes of Electrical Utility Construction 1956-65, Catalogue No. 62-526, 75c, is available from the Publications Distribution Unit, DBS, Ottawa.

Additional Studies in the 1961 Census Monograph Program Released

More penetrating analysis of census data as embodied in the 1961 census monograph series was mentioned in the previous *Statistical Observer.* Since then, a number of studies in the series have been released. These are:

1 *The Occupational Composition of the Canadian Labour Force* – Catalogue 99-550/1967 - $1.00. A large part of this, the second in the 1961 Census Monograph series dealing with selected aspects of the Canadian labour force, is devoted to tracing the changes in occupational deployment of the working population over the first six decades of this century. This long-run analysis is necessarily confined to the level of broad occupational categories and, insofar as data permit, an attempt is made to expose and explain the growth or decline in numbers within these broad groups. This 90-page study was prepared by Dr. Sylvia Ostry, Director, Special Manpower Studies and Consultation, DBS.

2 *Provincial Differences in Labour Force Participation* – Catalogue 99-551/1968 – 75¢. The purpose of this 40-page monograph also by Dr. Ostry, is to expose the extent of geographic (inter-provincial) variation in labour force participation in Canada in 1961 and to trace some of the historical changes that have occurred in respect to this phenomenon.

3 *Unemployment in Canada* – Catalogue 99-552/1968 - $1.00. Unemployment in Canada contains a review of the composition of unemployment. In it, Dr. Ostry attempts to answer the question "Who are the unemployed? ", and also considers the extent and nature of "underemployment" in Canada. The last two sections of the study examine the impact of unemployment on the family, particularly with regard to the resultant financial loss.

4 *Urban Development in Canada* – Catalogue 99-542/1967 - $3.00. Existing Canadian urban studies have left undone a great deal of basic spadework in the compilation and synthesis of fundamental information. It is appropriate therefore that "Urban Development in Canada", by Dr. Leroy O. Stone, DBS Consultant on Demographic Research and Assistant Professor of Sociology, University of Western Ontario, should concentrate on such fundamentals as growth, demographic structure and areal distribution. The study of these requires analysis of the demographic processes of fertility, mortality and migration and careful investigation of the relevant rates of these processes for sub-groups of population. The study also includes information on rural-urban differentials in population change and the distribution of urban population among urban size groups and major regions, partial analysis of the components and factors underlying selected patterns of urban population change, and partial analysis of population growth in census metropolitan areas.

Most of the data in this 300-page monograph are based on published tabulations of the 1961 Census of Canada. The aim of the study is not to produce definite analysis but to open further the doors to some of the information on urban development that can be found in DBS statistics, to contribute to synthesis and dissemination of this information, to stimulate further research in this field, and to point up some areas in which the statistical output of DBS may be made more responsive to the growing demands being made upon it.

Part I deals mainly with the urban population, describing and partially analysing its growth, geographical distribution and sex-age composition. Part II is mainly a discussion of some demographic aspects of metropolitan growth in Canada. It is understood that demographic patterns and trends are not the basic dimensions of metropolitan development. However, demographic patterns and trends are important aspects of metropolitan development and the great bulk of the existing data that provide indications of this development are demographic.

5 *Trends in Canadian Marketing* – Catalogue 99-543/1967 - $4.00. "Trends in Canadian Marketing" attempts to identify and explain long run changes in Canada's distribution system as revealed mainly by DBS data.

Marketing or distribution employs almost as many people as the manufacturing industries in Canada, and accounts for about one

half of the cost of goods bought by Canadian consumers. Yet, distribution, as this study points out, is "the economy's dark continent". The remedy lies in research of a fundamental nature.

Through its decennial Census of Distribution and its continual program of interim statistics DBS has become a rich storehouse of information on marketing in Canada. This information has been widely used, but most marketing research is for specific, immediate purposes. Few researchers have had the time or the resources to examine the panoply of Canadian distribution over the entire period for which data are available. *Trends in Canadian Marketing* is designed to serve that larger purpose.

The emphasis in the study is on Canada's retail trade, although reference is also made to the marketing activities of manufacturers, wholesalers, consumers and "outside" agencies.

Chapter 1 shows how the development of an elaborate distribution system has been related to Canada's industrial progress and economic maturity, and attempts to measure the magnitude of distribution in terms of cost and employment. Chapter 2 traces how the various tasks involved in marketing have shifted among retailers, wholesalers, manufacturers, consumers, governments and other agencies. Chapters 3 through 9 examine major trends in Canada's retail trade, especially since the first census of distribution in 1930. Chapter 10 shows how trends in Marketing Management are part of a comprehensive movement towards a total marketing process which is more fully rationalized and more responsive to our mutual needs.

The over 300-page study was prepared by M. S. Moyer, Professor, Faculty of Administrative Studies, York University and G. Snyder, Director, Merchandising and Services Division, DBS.

6 *Tendances et Facteurs de la Fécondité au Canada* – Catalogue 99-541 F/1968 - $4.50. The various factors influencing fertility - residence, age at time of marriage, religion, income, schooling and whether or not a woman works outside of the home - are analysed in a 425-page study by Jacques Henripin of the University of Montreal, prepared at the request of DBS and with the cooperation of Jean-Charles Desjardins, a demographer on the DBS staff. Particular attention is drawn to the practical results of fluctuating birth rate. For example, aging of the population raises costs of social security programs; population mix determines such important needs as housing, schools and hospitals. The monograph begins with a brief demographical history of New France (1608-1760) and of the Catholic population in Quebec from 1760 to 1880, based on figures obtained from parish registers.

Well illustrated with tables and charts *Tendances et facteurs de la fécondité au Canada (Trends and Factors of Fertility in Canada)* is intended not only for specialists in demography, but for those of the general public also who want to know more about their own milieu.

Copies of studies in the 1961 Census Monograph Series described above can be obtained from the Queen's Printer, Ottawa, or from Canadian Government Bookstores.

Manpower Projections in Ontario

The first volume of an extensive study on manpower trends and future manpower requirements in Ontario has been published by the Ontario Institute for Studies in Education. This study makes a detailed analysis of trends for many of the major professional and technical occupations in Ontario and contains projection tables for these occupations to 1986. In providing material and assistance, staff of the Census, Labour, Education and other Divisions of DBS were involved.

Copies of the study "Qualified Manpower in Ontario, 1961-68" are available from the Ontario Institute for Studies in Education, 102 Bloor St. W., Toronto 5, for $6.00.

Ontario Trade Statistics

The Ontario Department of Economics and Development has issued its latest edition of *Statistics for Profit*, a brochure designed to bring to the attention of businessmen considering exports or manufacturing development in Ontario, the names of products for which there is both an export and domestic market. Besides the usual sections showing major imports by SITC groups for the last two years, and Canadian exports to the U.S., a new section providing Ontario exports to all countries and percentage of Ontario exports to Canadian exports shows these statistics for the year 1965. This table results from special tabulations made for the department by DBS and does not appear in the regular DBS trade statistics publications.

The Department of Economics and Development was reorganized at the beginning of 1968 and renamed the Department of Trade and Development. Copies of the brochure are available on request from the Department at its address: 950 Yonge St., Toronto 5, Ontario.

Ontario Estate Statistics

A tabular analysis of personal wealth held in estates for which Ontario succession duties were paid has been published, as one of the studies for the Ontario Committee for Taxation. The statistics cover estates for which duties were levied in the fiscal year 1963-64. Included are extensive statistics on assets by estate size; age and sex of deceased; income of deceased, and so on. This is the first time that such detailed statistics on estates as a means of determining personal wealth have been published.

This report is obtainable from the Ontario Queen's Printer.

Sources of Economic Growth

A new study on the sources of economic growth has been published as No. 24 of the studies of the Royal Commission on Taxation. This study was done by Thomas A. Wilson of the Institute for Policy Analysis of the University of Toronto and Professor Harvey Lithwick of the Department of Economics of Carleton University.

It extensively studies the period 1926 to 1961 and discusses the sources for analysis of GNP for this period. There are extensive chapters on the labour force contribution to economic growth, the role played by capital formation and savings, demand, and the tax structure's effect on economic growth.

Of interest are tables showing the actual GNP and potential GNP for the years 1926 to 1963 and projections of GNP to 1975.

The report is for sale by the Queen's Printer for $2.50. Their Catalogue No. Z1-1962/1-1/24 should be cited.

Survey of Psychologists

The Science Secretariat of the Privy Council Office has commissioned a number of studies in the various disciplines and fields of science in Canada. These are studies dealing mainly with manpower in the professions and the requirements to support

research in the field. A recently issued study deals with psychologists.

This survey was made by the Canadian Psychological Association to determine the number of psychologists in Canada, the nature of their work, the number of graduate students in the field and the future requirements of manpower. The subject of research and studies in Canadian universities is also dealt with.

Detailed characteristics of age, sex, educational qualifications, income and nature of work of psychologists was collected and anlyzed. The nature of financial sources for research was studied in detail and information on students and academic staff in this field obtained.

The report titled "Psychology in Canada" issued as Special Study No. 3 by the Science Secretariat is available from the Queen's Printer at $2.50 a copy. Q.P. Catalogue No. SS21-1/3 should be cited.

Long-Term Wage and Salary Trends

The Federal Department of Labour has issued a chart study on longterm wages and salaries trends titled *The behaviour of Canadian wages and salaries in the post war period.* The majority of charts show trends from the period 1949 to 1965, although there is also a "current picture" section which gives analytical charts for 1965. The charts are accompanied by explanatory material.

Unique to this publication is a series of charts showing "skill differentials" or the changes in wage rates related to various skilled trades. Also there is a section on professional and executive salaries which was obtained from results of surveys by a private research firm. Supplementing the charts is a series of tables showing trends in salaries and wages.

This report can be obtained from the Queen's Printer for $1.50. Quote Catalogue No. L41-567.

Canadian Nursing Statistics

Facts and analyses of nursing salaries, staffing, and nursing education are contained in *Countdown 1967*, a 106-page annual released by the Canadian Nurses' Association.

Countdown 1967 is described by the CNA as an easy-to-use research tool, designed for the bookshelf of all nursing planners. One hundred statistical tables display both national and provincial data in fifteen topical sections. Each section has a commentary on sources of data as well as a summary of highlights and trends.

A cross reference between *Countdown 1967* and *Facts About Nursing* issued by the American Nurses' Association is available from the CNA to assist readers in comparing Canadian nursing data with similar U.S. data.

Some of the Material in *Countdown 1967* was processed and provided by the Health and Welfare Division and the Education Division of DBS.

"Countdown 1967" is available from the Canadian Nurses' Association, 50 The Driveway, Ottawa 4, Canada, at $4.50.

Report on Foreign Ownership

A major study titled *Foreign Ownership and Structure of Canadian Industry* and popularly known as the Watkins Report is now available. This report was prepared by a task force headed by Melville H. Watkins, who was commissioned by the Hon. Walter Gordon, former President of the Privy Council, to head the team which made the survey and recommendations included in the report.

This report is not a source of statistical material on the subject; statistical material is available in the DBS publications on the international balance of payments and the CALURA annual report on corporations. Rather, the report is a detailed analysis of the trends as shown by the statistics, from which conclusions are drawn and policies proposed.

Of interest to statisticians, economists and others, who may be studying this subject are the recommendations which propose the creation of a special agency to collect information on foreign ownership under the guiding principles program, and, analyze it for government use. The report also recommends that all federally incorporated private companies and public companies, regardless of nationality of ownership, file returns with the Department of Consumer and Corporate Affairs and that this information be made public. Should adequate information not be obtained in this manner, it is suggested that the financial statements and schedules filed under the Corporations and Labour Unions Returns Act Administration, which are presently confidential, be made available to the public.

The report in both English and French editions may be obtained from the Queen's Printer in Ottawa for $4.00 a copy. Queen's Printer's Catalogue No CP22-868 should be cited.

Historical Catalogue of DBS Publications

Statisticians engaged in research, and librarians have long felt the need of historical bibliographical guide to DBS publications. *The Historical Catalogue of Dominion Bureau of Statistics Publications, 1918-1960* in conjunction with the current catalogues of 1960 and 1964, is designed not only as a bibliographical guide to the publications issued by DBS since its inception in 1918, but also as a means whereby a library collection of Bureau publications can be physically organized, classified and catalogued.

The 300 page catalogue lists all publications designed to provide statistical information for the public with the exception of special statements, press releases and preliminary or advance statements which were issued ahead of regularly scheduled final reports.

Historical Catalogue of Dominion Bureau of Statistics Publications 1918-60, Catalogue No. 11-504, $2.50, is available from the Publications Distribution Unit, DBS, Ottawa, or at Canadian Government Bookstores.

Lacking Vol.1, nos. 3-4

Statistical Observer

Contents

VOLUME 2, NO. 1

The Statistical Observer is a publication designed to contribute toward informing economists, statisticians and related professionals throughout Canada about selected statistical and research developments undertaken in DBS, in other Federal departments and agencies, in provincial departments, in universities and in business and independent research organizations.

Suggestions and contributions of articles for publication should be addressed to the Editor, Statistical Observer, Information Division, DBS, Ottawa. (Telephone 996-1665).

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Statistical Observer, June 1969

ERRATUM

Vol. 2, No. 1

The article headed "New Sample, New Techniques to Improve DBS Retail Trade Estimates", (Col. 2 page 6) should be amended as follows:

Last line of first paragraph should read January 1970 (not 1960).

0804-506

Feature

Computerization Will Provide Rapid Retrieval of Census Data

The Dominion Bureau of Statistics has under development a computerized system for providing census data for 1971 on a user-specified basis in the large urban areas and certain other regions of Canada.

Known as the DBS Geographically Referenced Data Storage and Retrieval System (GRDSR) it is designed to meet the growing information needs of administrators, planners and researchers in the social, economic, business and other fields. The system should be particularly valuable to planners, developers and users of muncipal management information systems. It could also offer important benefits for many other types of users.

GRDSR places the emphasis on making information available in larger urban areas by user-specified segments, as opposed to standard areas such as enumeration areas, census tracts and municipalities. Census data relating to these criteria, however, will continue to be provided.

The system consists of a set of data processing operations and the storage and retrieval of corresponding data on randomly accessible data storage devices. It provides flexibility for the retrieval and tabulation of any combination of census data and for cross-referencing of different data files by any user-specified area (provided always that the confidentiality requirements of the Statistics Act are safeguarded.)

GRDSR, which is the outcome of two years' research, has been designed specifically for larger urban areas for the 1971 census. Less extensive but similar capabilities are planned for the rest of the country. Although designed initially for manipulating data derived from population censuses, the system may also be extended to manufacturing, retail and agricultural census data.

It is being developed in response to increasing demands on DBS – which the Bureau can now economically service – for tabulations of statistics arranged by other than standard geographical areas (e.g. census tracts).

Conceptual Aspects

GRDSR is based on the fact that most DBS surveys have common reference points in the addresses of respondents, which can be given geographical coordinates.

On this basis, once a survey (census, for example) is taken, the data obtained from each respondent, with his address, can be converted to a machine readable form. Then the appropriate geographical coordinate as referenced in the Universal Transverse Mercator System, is linked to the address and automatically replaces it.

A basic requirement is an address conversion file. This lists all block faces (generally one side of a street between neighbouring intersections) by street names, by block face terminal addresses, and by corresponding centroid coordinates. An essential working machine readable file, it must be kept constantly up to date as to changes in addresses, changes in street names and all other pertinent data.

How Users May Define Areas

Using the block faces as building blocks, the urban user can define his own specific study area simply by outlining the block faces within the desired area. This may be done, and preferably should be done, on a computer-printed map which the Bureau proposes to supply.

Areas may be enclosed by streets, or by other well-defined boundaries, may cut across boundary lines of census tracts or enumeration areas (in urban applications) but may not cut across block faces. Thus the user has very considerable flexibility in areal delineation and almost unlimited practical possibilities are opened up for user whose interests are essentially small area in nature. Typical of areas that could be studied under GRSDR system are school districts, town planning districts, traffic zones, product testing and marketing zones.

It must be noted, however, that the constraint of Statistics Act confidentiality requirements – which prohibits disclosure of information on individuals or individual bodies – remains. The user should not, therefore, expect to receive data for individual block faces or even city blocks.

Benefits of the system can, however, far outweigh this constraint.

Among these benefits is that the technique might be equally usable for locally available computerized municipal data. Arrangements may be possible for local agencies to obtain the computer programs used by the GRDSR system to be locally operated on other than DBS data.

Storing Data

Once geocoded, census data for individual records are stored as strings – each string recording the information for one data characteristic for the population reported.

Information in each string will be arranged as to:

- Individuals within households.
- Households within block faces.
- Block faces within the urban geocoded area.

There are as many data strings as there are data characteristics recorded. While the design of the data strings assures maximum efficiency in retrieval and cross-tabulating of data, the required data strings and their portions corresponding to the designated retrieval area are accessed through the block face centroids.

By this means of storing data it is expected that retrieval will be a relatively simple operation.

The initial step will be for the user to specify exact data characteristics and the precise variables for these characteristics (as in age, sex, income, ethnic origin) and the boundaries of the requested area.

Computer processing will then, as a first step, select all the block face centroids which lie within the area. From this point, a generalized program will retrieve and tabulate requested data fields bearing the selected block face identifications. No programming work will be required on the part of the user, nor any knowledge of computer programming.

Scope and Limitations

Geocoding of urban areas requires a large initial supply of street input information such as accurate street maps and up-to-date address ranges – and this information must be kept constantly updated.

Since this information must be coded for computer processing, there are obvious limits on the number of urban areas that can be geocoded for the 1971 census. Present objectives call for geocoding those areas that had a population in the city proper in 1966 of at least 100,000 – providing also that there are local agencies in these areas that are prepared to supply and periodically update the required street input information.

An alternative form of geocoding, based for the most part on assigning geographic

coordinates to enumeration areas, is also planned for 1971 in all areas not otherwise geocoded. This will cover many areas that are obviously urban in character and which, in time, will be refined to a block face level.

Municipalities generally appear willing to work jointly with DBS toward attainment of the common objective – the availability of more flexible data – and the degree of their willingness to assist in supplying street input information is a determinant of achieving geocoding in their areas.

Their participation is a logical contribution. Local agencies are most familiar with their areas and have an obvious self-interest in establishing an automated, up-datable, nationally compatible urban data system that can be queried for short and long range decision making.

The first contribution sought by DBS is, of course, source documents (basically, maps and address ranges by block faces), checking of discrepant information and a continuing supply of update information and, perhaps, coding of street pattern information – all preferably through one designated agency for the urban area concerned.

In return for such participation, DBS would be in the position to provide tabulations from the 1971 census by user specified areas in the locality concerned. DBS also expects to offer the local agency access to the computer programs necessary to geocode their own data and to retrieve such data for any query area.

Such programs would be designed to operate on the type of medium-scale computer the agency might have or would be available in a nearby service bureau. These programs, typically, would enable the local agency or its clients to geocodé, store and retrieve locally generated data covering such areas as assessment, planning, traffic, land utilization, zoning, education, health and welfare.

Tabulations from locally generated data could be supplemented with census data on an aggregate basis.

The Nature of the Need

The nature of the need for such data services was underlined in the 1966 census which showed that nearly one half of Canada's population at that time – some 9.7 million people – were then living in 19 metropolitan areas. These needs do not abate. The Economic Council of Canada has estimated that well over 80 per cent of the 25 million population it forecasts for Canada in 1980 will live in urban areas – and that about 40 per cent of these urban dwellers will live in the Montreal, Toronto, Vancouver, Winnipeg, Calgary, Edmonton and Ottawa regions alone.

The authorities responsible for the development of metropolitan areas are not unaware of their own need for gathering and computerizing data for planning purposes – and a multiplicity of computerized urban information systems could easily develop in the absence of close cooperation between the various levels of governments. Several cities may already have independent programs under way. These systems may not be compatible each with the other, however, thus creating problems in the effective exchange and utilization of information.

Information on GRDSR system design is available on request from Mr. John Weldon, Chief, General Survey Systems, Sampling and Survey Research Staff, DBS, Ottawa. Requests for information on potential census applications of Geocoding should be directed to Mr. W. D. Porter, Director, Census Division, DBS, Ottawa.

Family Expenditure Surveys Extended for more Detail

Government departments, business and academics are being consulted concerning their needs from the program of national family expenditure surveys which was launched in January, 1969 by DBS. This program, which has 1969 as its reference year, consists of a series of monthly diary-keeping surveys of food expenditure throughout the year, and a recall interview survey, early in 1970, of family expenditure and income.

Food Expenditures

The monthly program now in progress is primarily a study of food expenditures, designed to obtain detailed information on weekly household purchases of food, both in terms of quantities and expenditures. In method and content it closely parallels earlier studies such as "Urban Family Food Expenditure 1962", DBS Catalogue 62-524, at all income levels, urban and rural. Purchases of some non-food household supplies are also included.

The food survey sample of approximately 15,000 households is distributed evenly by month over the year 1969. It is expected that at least 10,000 usable two-week records will be obtained, or an average of between 800 and 900 per month. About one-third of the sample represents smaller urban centres and rural areas. Approximately two-fifths of the sample is concentrated in twelve major urban centres for which separate expenditure patterns are required. These centres are: St. John's, Halifax, Saint John, Montreal, Quebec, Toronto, Ottawa, Lakehead, Winnipeg, Regina, Edmonton, Vancouver. Each of these cities will be included in the survey in each month. Representation of the remaining cities and of smaller urban centres and rural areas will vary from month to month.

The addition of quantity information to the survey will add considerably to the value of the information collected. About two hundred food purchase items will be tabulated, as well as detail on home-produced foods and gifts of food. The non-food ttems include household cleaning supplies, paper supplies and food wraps, other household supplies, personal care supplies, alcoholic beverages, cigarettes, tobacco and reading materials.

Information is also collected on income, family size and other family characteristics. Results will be tabulated for each of the twelve major cities, and by province, with urban-rural breakdown by province and/or region depending on sample size. Cross-classification by family characteristics will be possible on a national level, by region and, with varying degrees of reliability, by city and province.

It is planned to commence tabulations by the middle of the year, and some preliminary results may be released before the end of 1969. However the main body of tabulations, including cross-classifications and special analytical studies, will be run after all results for the year have been accumulated.

Family Expenditure

The second phase of the 1969-70 program, the Family Expenditure Survey, will examine expenditures on a wide variety of consumer goods and services, intended to account for *all* household expenditures in 1969. It parallels earlier studies such as "Urban Family Expenditure 1964" DBS Catalogue 62-527, but like the 1969 food study will cover all types of spending units, urban and rural, all income levels and family size groups.

Field work will be conducted in early 1970 and will ask for a recall of purchases during 1969. This survey will cover a sample of some 21,500 households from which about 15,000 usable returns are expected. The questionnaire, which will run to more than 20 pages, is now in the design stage. While it is not likely that there will be substantial additions to the item content, the revision of the previous schedule will incorporate such modifications and additions which are considered to increase materially the usefulness of the data.

This study, like the food survey, will obtain data on income and other family characteristics for analytical purposes. Thus it is expected that information on food expenditure in relation to the total family budget can be co-ordinated, as in past surveys, with the very detailed information on food expenditures obtained in the food survey. Also, in order to permit a complete accounting over the survey year, information will be obtained on changes in assets and liabilities. In this respect it is being closely co-ordinated with a study on Incomes, Assets and Indebtedness to be conducted by the Consumer Finance Staff in April, 1970.

Output from the Family Expenditure Survey will be available in the standard published report and in additional special tabulations, either as supplementary data tabulations or quantitative analyses. The processing of family expenditures surveys is slow and time-consuming, even with the advantages of electronic processing, because of the necessity for careful hand-editing and voluminous key-punching. The volume in this survey is increased more than seven-fold. A possible advantage of this greater volume, though, is the opportunity it offers for processing individual cities, provinces and regions as editing and key-punching progresses. This may permit first partial results to be released by late 1970, with subsequent releases following throughout 1971.

Suggestions and inquiries should be directed to Miss I. McWhinney, Chief, Family Expenditure Section, DBS, Ottawa.

International Retail Price Comparisons Produced by DBS

Those concerned with the need for some measure of comparative living cost conditions being encountered by Canadian staffs employed abroad will be interested to know that the Prices Division of DBS produces indexes which relate retail prices abroad with those prevailing in Canada. These Post Indexes, as they are called, were primarily developed to regulate the allowance levels of Canadian Government civilian and military personnel serving Canada in some 70 countries abroad. Because of their specialized nature these indexes are not published, but organizations faced with problems of compensating employees for foreign retail price conditions might well find them to be a useful ingredient for the development of an easily administered and readily understood foreign allowance system.

Each Post Index expresses, within 5 percentage point ranges, the concurrent retail price relationship for a range of goods and services at the foreign city as compared with Ottawa. The current Ottawa price level is always designated as 100: thus, for example, a Post Index of 105 indicates that the general price level at the post for those elements of the budget being compared is about 5 per cent higher than in Ottawa. Rent differentials are excluded from the comparison because a separate allowance system, with which DBS is not directly concerned, compensates Federal Government staffs for the accommodation while abroad. Furthermore, since Canadian public servants pay Canadian rates of income tax regardless of their place of service, income tax differentials are also excluded.

Briefly, the Post Index encompasses comparison of relative retail price conditions for such family expenditure components as food consumed in the home, meals taken in restaurants, clothing, private and public transportation, personal care, household supplies, domestic fuel and utilities, dental care, liquor and cigarettes. To the extent that government personnel serving abroad may have access to special purchasing facilities the Post Indexes reflect this fact.

Efforts are made to ensure that a full-scale price survey is undertaken at each foreign location at least at three year intervals, and more frequently when conditions so warrant. Post Indexes, once established, are subsequently reviewed regularly in the light of foreign exchange movements, and changes in both Ottawa and foreign prices. Because these indexes reflect the current price relationship between a foreign location and Ottawa, a Post Index will tend to remain unchanged when Ottawa and post price movements are broadly similar. On the other hand, new Post Indexes are established when price movements vary enough to alter significantly an existing Ottawa-post relationship.

In developing any place-to-place measures of price or living cost differentials, considerable problems arise from geographic variations in buying habits and expenditure patterns, and from differences in the quality and availability of goods and services. These problems are magnified in international comparisons. By and large, however, techniques have been developed to overcome these problems within the limited context of the specific uses to which these indexes are meant to serve. Accordingly, although foreign Post Indexes do not have such wide applicability as to warrant their general publication, an increasing number of Canadian organizations employing staffs abroad are finding them useful in the operation of their own compensation systems.

Information regarding these indexes is available on request from the Chief of the International Prices Section, Prices Division, DBS, Ottawa. Inquirers are asked to indicate the particular foreign cities for which comparative price information is required.

Prices in Eight Canadian Cities Compared in New Statistical Study

Inter-city indexes expressing differentials in retail prices among eight Canadian cities have recently been released by DBS. This new statistical study broadens the scope of index measurements that had been published in respect of food to include other types of family expenditures such as clothing, transportation, household operations, health and personal care, recreation and reading, and tobacco and alcohol.

Comparisons of retail price levels have been drawn for nearly three-quarters of the average family budget on which the Consumer Price Index for Canada is based. The new indexes serve to measure disparities in retail prices between cities whereas the Consumer Price Indexes published every month for a selection of large centres measure price movements within those cities from one time period to another. Pending further research, comparative prices of shelter (both rented and owned), domestic utilities (fuel, light and water), and restaurant meals have not been included in this inter-city study.

The indexes have been computed on the basis of retail price data collected in May 1965 and updated to May 1968 to reflect price changes during those three years. Prices in Winnipeg were selected as the base for comparisons with Halifax, Montreal, Ottawa, Toronto, Regina (food only), Edmonton and Vancouver.

The study of Canadian inter-city retail price comparisons has been published in the November 1968 issue of Prices and Price Indexes (DBS Catalogue 62-002, 40¢).

Consumer Price Indexes now on 1961 Base

Canada and regional city consumer price indexes are now calculated and published by DBS on a time reference base of 1961=100, instead of the 1949 base. This arithmetic conversion does not alter the movements of consumer prices reflected in the former indexes, and no changes in weighting to reflect the content and relative importance of items in these indexes are being introduced at this time.

The revision in reference year is in keeping with the DBS policy of periodically updating indexes to more current periods. The selection of 1961 as the base will bring consumer price indexes into conformity with other important indexes already published on this time base such as the index of industrial production and the employment and payrolls indexes. In view of the discontinuance of 1949 as a time reference period it is recommended that users employ the 1961-based indexes in future contractual arrangements and other uses.

For the convenience of users continuing to require the Consumer Price Index for Canada on the present 1949 base, the all-items index only, will be published monthly on both the 1961 and the 1949 base, for an interim period. The index on a 1949 base will be derived by arithmetic conversion of the 1961-based index. Users requiring the index on a 1949 time reference base should tell the Prices Division, DBS, Ottawa, the length of period for which the 1949-based index will be needed.

Although other consumer price indexes and components will in future be published on a 1961 base only, they will be made available on a 1949 base on request.

New Sample, New Techniques to Improve DBS Retail Trade Estimates

A new sample, using new concepts and techniques to substantially improve the quality of retail trades statistics published by DBS, is expected to be operational by January 1969. The sample will result in:

(a) more representative coverage of a number of kinds-of-business groups;
(b) more precise data on store births and deaths;
(c) publication of retail sales estimates for the Montreal, Toronto, Winnipeg and Vancouver metropolitan areas;
(d) issuance of "early" summary estimates of retail trade by provinces.

In short, the new sample will be used to derive current retail trade estimates for Canada, the provinces and four metropolitan areas. These estimates will form part of the monthly publication "Retail Trade", Catalogue 63-005, and will be presented in tabular form by kind of business and by chain and independent stores, for the twelve months and cumulatively for the year-to-date.

The project is being done by the Merchandising and Services Division of DBS with the active assistance of the Sampling and Survey Research staff.

Methodology

The sample will be drawn from a universe of about 150,000 retail businesses including chains, department stores and independent stores. Source data are monthly sales figures from firms within the sample, and inventory evaluations to be supplied each quarter.

The sample will be drawn from a "master list" and an "area list". The master list will be the DBS Employment Survey ES1 & 2 lists, together with stores in shopping centres and chain stores which may not now be on the ES lists. Because the basic sampling unit will be the retail outlet or store location, it will be necessary to send preliminary questionnaires to the head offices of each of the companies on the ES1 list to obtain the addresses and descriptions of their various outlets. This is not necessary for the ES2 list which is composed solely of single unit establishments. The master list thus obtained will cover most of the retail outlets in Canada.

As well as the master list, sample areas will be selected to insure that any stores not on the master list have a chance of being selected for the survey. All stores in the selected sample areas will be enumerated and the results compared to the master list. Those stores not on the master list will become part of the area list. A sample from the master list and stores on the area sample list will be surveyed at the same time by use of a mailed questionnaire. Further enumeration of stores of the area list will be necessary every six or twelve months to keep track of outlets which go out of business, or change their names or addresses or both. This will not be necessary for stores on the master list because the Employment Survey lists are up-dated continuously.

The samples derived from the two frames, list and area, will initially be non-rotating. However, once preliminary results have been obtained and analysed, and the system appears to be working smoothly, rotation will be well worth considering. Rotation of the sample would have two beneficial side effects: first, it would act to lower the balance in birth and death estimates by shortening the time lag in re-visiting the selected areas; second, it could be useful in lowering the non-response rate in the monthly survey.

This project is the first stage of a two-stage project. The second stage, which is expected to begin early in 1969, will deal with editing

and estimation of data, variances, and automatic follow-up of non-response. Although these are basically part of the "maintenance" of the ongoing survey, stage two will undoubtedly involve use of certain new concepts and methods. Additional details will be published later, after the major development work has been completed.

Inquiries about the retail trade sample should be made to G. Snyder, Director, Merchandising and Services Division, DBS, Ottawa.

DBS Streamlines Data Collection For Retail Commodity Sales Tables

A trend toward "scrambled merchandising" by various kinds of retail businesses such as drug stores, grocery and combination stores, service stations and hardware stores, has increased the need for data to show what can be expected to be available from the various types of retailers. Data on retail sales by commodity is required by government, by manufacturers, by wholesalers, and by the retailers themselves.

Collection of retail sales data by class of commodity has been done in the past – for the years 1930, 1941, 1951 and 1961 – by the Merchandising and Services Division in conjunction with the Census of Merchandising and Services. The introduction of a quinquennial census programme beginning in 1966 and the consequent increased workload, created a need for a streamlined approach to the mid-decade census of the merchandising and service trades. Because of this, DBS plans to repeat the detailed commodity analysis of retail sales at 5-year intervals falling *between* the Censuses of Merchandising and Services which are undertaken in the first and sixth years of each decade. For example, the commodity survey will be conducted in 1969, covering the 1968 calendar year. This plan reduces census work load during census years and permits utilization of the trained permanent nucleus of the Merchandising and Services Division Census Section during the intercensal period.

For the 1968 Commodity Survey, a sample of some 30,000 retail firms has been selected using the 1966 census as the sample "base". These firms will be asked to report sales broken down into about 150 important commodity groupings from which estimates of total sales by commodity classes will be made. Although this number of groupings may be considered small, it represents a realistic appraisal of what can be expected to be available from the great majority of retailers.

Inquiries about the commodity survey should be made to G. Snyder, Director, Merchandising and Services Division, DBS, Ottawa.

Exports To U.S. by Regional Destination To be Tabulated

For more than a year, DBS has been testing and preparing a new series of statistics on Canadian exports to the U.S., which provides much greater detail than has been previously available. In recognition of the fact that the United States is by far Canada's best customer, taking approximately two-thirds of our domestic exports, DBS has devised a series based on regional breakdowns of that country, which yields more precise knowledge to exporters of the destination of products in which they are interested. The proposed tabulation will cover all exports of Canadian goods to the United States, and the data will be cross-classified in the following fashion:

I *By commodity group* of the Export Commodity Classification, 230 groups in all.

II *By census sub-division* of Consignment in the United States. A census sub-division consists of two or more contiguous states of the U.S. There are eighteen census sub-divisions in all, covering the fifty states, plus the District of Columbia.

III *By region of lading* in Canada. There are five regions, namely, Atlantic, Quebec, Ontario, Prairies, and Pacific.

The tabulation will be produced in two parts, the first part giving group detail on a value basis, the second quantity information where appropriate. The material will be produced quarterly and show a cumulative total only, for three, six, nine and finally twelve months of the calendar year. The schedule for producing this data is not yet firm, but the External Trade Division of DBS intends to commence with the first quarter of 1969. The price for this new series is $100 a year. Those who want several copies will pay $100 a year for the first set and $25 a year for each additional set.

Those interested in this project, are invited to contact Mr. G.A. Richardson, Director, External Trade Division, DBS, Ottawa, Canada.

Municipal Finance Reporting Manual Incorporates Important Changes

A new edition (the fourth) of the "Municipal Finance Reporting Manual" to be published by DBS in English and French, will reflect decisions reached at the first three sessions of the Eighth Federal Provincial Conference on Municipal Finance Statistics.

The new edition will differ in several important respects from its predecessors. It will be a series of volumes, each dealing with a specific topic, rather than a single volume. The design of accounting systems to provide information for users of municipal finance statistics will be emphasized rather than reporting formats as in earlier editions. Finally, the need to provide peripheral information to assist in the interpretation of financial statistics will receive much greater attention together with the type of information required.

The first volume of the new edition, which will describe revenue and expenditure classification systems, is now in preparation.

Conference Meetings

The Eighth Federal Provincial Conference on Municipal Finance Statistics will meet three times in 1969. The Fourth Session, held in Winnipeg January 22-24, examined DBS proposals for revising asset and liability classification systems.

The Fifth Session was held in Toronto during the last week of May and a sixth is scheduled for Halifax next October. This session will conclude the examination and consider recommendations for peripheral information required for the proper interpretation of financial statistics.

Inquiries should be directed to Mr. A.G. Kerr, Chief, Local Government Section, Governments Division, DBS, Ottawa.

Timeliness in Trade Statistics

Gains continue to be made in the timeliness of release of Canada's international trade statistics, so that DBS performance now compares favourably with that of other leading trading countries in producing comparable data.

Preliminary totals of Exports by Commodities for October 1967 were released on November 30, 1967 and for October 1968 on November 13, 1968. The detailed commodity publication for September 1967 was

Announcing...

released on January 11, 1968, and for September 1968 was released on November 13, 1968. Preliminary totals of Imports by Commodities for October 1967 were released on December 8, 1967 and for October 1968 were released on November 18, 1968. The detailed commodity publication for September 1967 was released on January 18, 1968, and for September 1968 was released on November 22, 1968.

Gains were achieved by improved operational procedures, including an increased application of computer techniques so that the quality and coverage of the statistics remain unchanged.

Sampling applied to processing data on low-value imports is an example of the techniques used by DBS to improve timeliness and cut down the DBS work load. Imports from the United States, comprising about 70 per cent of Canadian imports were considered to be a fertile area for sampling, particularly in that 63 per cent of the lines on source documents coded for tabulation fall below $1,000 and yet account for only eight per cent of the total value of imports. Considerable research of historical records and numerous tests on current data have resulted in use of a sampling method of processing all customs entries for imports from the United States with a total value of $1,500 or less.

Apart from its effect on timeliness, the new sample alleviates a staff increase which would otherwise have been needed to keep abreast of the mounting document flow brought about by continuing growth in Canada's international trade.

There has been a change in section name in the National Accounts, Production and Productivity Division of the Economic Accounts Branch. The unit, which was formerly known as the Current Business Indicators and Time Series Data Bank Section, is now called the *General Time Series Section.* Responsibilities of the section are not changed.

Dr. Paul Rubinyi has been appointed Director of Central Planning in DBS. Dr. Rubinyi will report to Dr. S.A. Goldberg, Assistant Dominion Statistician. Planning and the related activity of priority setting have existed in DBS for a long time but in a less formal way than has now become necessary in view of the Bureau's growing and increasingly complex responsibilities. Dr. Rubinyi's functions will include the development of systematic approaches for the identification and clarification of DBS objectives and the setting of priorities in the light of costs and the massive contemporary needs for information. He will develop and guide the implementation of a Bureau-wide system of long-run planning for use in the various divisions, branches and DBS as a whole in order to promote the most effective and efficient utilization of resources. He will guide and co-ordinate, in co-operation with the Executive Committee and the directors, the planning and program budgeting activities in DBS.

Dr. Rubinyi has had a wide and distinguished career. He holds post-graduate degrees in economics and accounting and has had extensive practical experience in statistics, economic planning and accounting. During the last six years he served as a senior management consultant and corporate planning expert, latterly with the firm of Urwick, Currie and Partners, Limited.

Dr. T.J. Vander Noot has been appointed Associate Director-General of the Operations and Systems Development Branch. Dr. Vander Noot was previously a senior economist with the Economic Council of Canada.

D. Keith McAlister has been appointed Chief of the Balance of Payments Section in the Economic Accounts Branch. Mr. McAlister was previously Head of the Capital Account Sector in the same Section.

David Buxton has succeeded Mr. McAlister as Head of the Capital Account Sector, while continuing, for the time being, to be responsible for the Investment Position Sector of the Balance of Payments Section.

Mr. F. Fix has been appointed Co-ordinator of Standards, Operations and Systems Development Branch. Mr. Fix was formerly Chief, Operations and Systems Development Programming Section of the Central Programming Division.

Kenneth F. White has been made Director, Information Division, DBS. Mr. White was formerly Chief of Publicity Services. Prior to joining DBS, Mr. White worked for a number of years in the newspaper business, largely in financial editing.

Pierre Joncas is now Director of the Canada Year Book Division, DBS. Mr. Joncas was previously with the Department of External Affairs on the staff of the Canadian Embassy in Washington. He had previously worked for DBS in the Business Finance Division and the Health and Welfare Division.

Edward J. Marten, formerly Director, Information Division, DBS, is now Program Co-ordinator, Year Book and Information Divisions. Kenneth F. White succeeds Mr. Marten as Director of the Information Division and Royd E. Beamish has been appointed to succeed Mr. White as Chief, Publicity Services Section.

Norman Hodge has joined DBS as Statistics Use Development Officer, Toronto. Mr. Hodge's address is DBS, 8th floor, Arthur Meighen Building, 25 St. Clair Avenue E., Toronto 7. Mr. Hodge was formerly a statistician with Bell Telephone Company of Canada.

Dr. Cecil Lingard retired recently from DBS where he was Director of the Canada Year Book Division. From 1945 to 1950, Dr. Lingard was Editor of *International Journal* and Research Secretary of the Canadian Institute of International Affairs. In 1951 he became Editor of the Canada Year Book, and later Director of the Division. Dr. Lingard authored various published works on Canadian subjects and has contributed numerous articles to learned journals and encyclopedias.

Mr. R. Ellis Drover was appointed in September 1968 as Co-ordinator of Provincial Liaison and Consultative Services, DBS. He is responsible for promoting close co-operation and improved communication between DBS and provincial agencies. He is also directly concerned with a survey on travel by Canadians within Canada, which is being planned jointly by the Provinces and DBS. It is to be conducted in 1970.

G. B. Joshi has been appointed Chief of the Methods Research Section of the Census Division, DBS. Mr. Joshi was previously Head of the Statistics and Operational Research Section of the Nelson Research Laboratories, Stafford, England.

John Bell has been appointed Division Administrative Officer for the DBS Census Division. He comes to Census from the Agriculture Division, where he held a similar position. Previously he was with the Canadian Government Travel Bureau.

Tom Hillis, formerly Chief of Administration and Operations in the DBS Census Division has accepted an appointment as an Administrative Officer in the Department of Energy, Mines and Resources at Burlington, Ontario.

Mrs. Francis Pierre-Pierre joined DBS recently to undertake statistical analysis and development of comprehsensive tabulation programs for notifiable diseases, tuberculosis and hospital morbidity statistics in the Public Health Section, Health & Welfare Division. After employment in DBS in 1966 and 1967, Mrs. Pierre-Pierre worked for approximately nine months in 1968 as an Analyst Secretary for International Telephone and Telegraph (Europe and Latin American) in Antwerp, Belgium.

Harry Bradshaw has joined the Census Division of DBS as Chief of the new Census project Control Section. Programme Evaluation and Review Technique (PERT) and other allied techniques will be used in this new section. PERT is a relatively modern management tool for control of large scale projects. Mr. Bradshaw has extensive experience in the organization and methods field and recently worked in the Federal Department of Transport and in the Department of Manpower and Immigration.

R. Paul Shaw has been employed as a rural sociologist in the Rural Data Section, Census of Agriculture, DBS. Mr. Shaw will be concerned with means for providing socio-economic characteristics of the farm operator and his household through the integration of population and housing data from the Agriculture Census. Upon completing post-graduate work at the University of British Columbia, Mr. Shaw was involved in a variety of analytical research programs dealing with socio-economic characteristics of the agricultural and industrial labour force of selected economies.

Frederic L. Torrington has joined DBS as Chief of the Research and Development Section, Merchandising and Services Division. During the past sixteen years, Mr. Torrington was a market research executive in England and Canada, for the past nine years serving as Vice-President and Marketing Research Director of McConnell Eastman Limited, a Canadian advertising agency.

Dr. Laszlo Sonkodi has been appointed Chief of the Wholesale Trade Section, Merchandising and Services Division, DBS. Before joining DBS last February, Dr. Sondoki had been an economist to the Chairman of a large chain organization in England and was also employed as a marketing expert by the Ministry of Commerce in Kuwait.

William Iwasaki, active for many years in a number of sectors of National Accounting, recently became Chief of Analysis and Development Section, External Trade Division, DBS. Mr. Iwasaki was formerly Chief of the Balance of Payments Section, Balance of Payments & Financial Flows Division.

Horst Stiebert has joined the Special Manpower Studies and Consultation Division of DBS to undertake research on labour market data arising from and related to, the new Job Vacancy Survey. Mr. Stiebert is a graduate of Simon Fraser University.

Walt Saveland has joined the Vital Statistics Section, Health and Welfare Division, DBS, and will be responsible for analysis and research in vital statistics with particular attention to marriage and divorce. Mr. Saveland is a sociology graduate from the University of Chicago, did graduate studies at Northwestern University, and worked at U.S. Bureau of the Census.

Judy Holmgren, who joined the Vital Statistics Section, Health and Welfare Division, DBS, will be responsible for analysis and research in Vital Statistics with particular emphasis on computer applications to vital statistics data. Miss Holmgren is a computing science graduate from the University of Alberta.

Mercedes Rivera has been appointed as a subject specialist in the General Population Section, Census Division, DBS, in charge of fertility and migration statistics. Miss Rivera specializes in sociology and demographic studies.

Paul Timmons has been appointed Chief of Domestic Travel Survey, Sampling and Survey Research Division, DBS. Mr. [illegible]mons was formerly with the Special Surveys Division.

John Brown has been appointed Head, Transportation Research Unit, Transportation and Public Utilities Division, DBS. Mr. Brown, who has recently completed a one-year study of container rating for Atlantic Container Line Ltd., has had experience in several British transportation organizations

Ted Hewitt, formerly editor of the Mechanical Contracting and Engineering Magazine, has joined DBS to conduct liaison work with contractors and contractor associations during the first annual Census of Canadian Mechanical Contractors in the Construction Section of Business Finance Division.

Ray C. Luft, has been appointed as He[illegible] of the Ownership Unit of the CAL[illegible] Division, DBS. He will be responsible f[illegible] analysis of non-resident owner[illegible] porations reporting under CALURA, and revealing the intercorporate ownership [illegible] such corporations.

Ed. Cannon has recently jo[illegible] pany Establishment Integratio[illegible] the Integration & Develop[illegible] DBS. He will be dealing wi[illegible]h senior officials of selected large co[illegible]panies to investigate the possibility of integrated reporting to DBS as an integral function of the [illegible] counting procedures. Mr. [illegible] merly Manager of Internal A[illegible] with the Royal Trust Co[illegible] Office in Montreal.

A. Symons has been appoi[illegible] the Minerals Unit, Energy and Minerals Section, Manufacturing and Primary Industries Division, DBS. B.J. Lynch [illegible] appointed Chief of the Foods, Beverages and Textiles Section in the same division. Mr. Lynch, who succeeds G. E. Clarey, was formerly head, Monthly Index of Industrial Production in the National Accounts, Production and Productivity Division.

H. M. Pipe, Assistant to the Director (Administration), Manufacturing and Primary Industries Division, DBS retired March 20 after 29 years in the public service. He first joined the Department of National Defence on April 29, 1940 and joined DBS in July, 1947.

T. Kearney, Head of the Logging and Special Surveys Unit, Forestry Section, DBS, retired in January.

Conferences

Canadian Police Statistics Discussed at Chiefs' Conference

"Statistics are (a) most useful and valuable tool at the disposal of the police . . . , A reliably informed public may be inclined to become more concerned with the problems confronting the police and take the positive steps necessary to assist the police in coping with crime conditions". So said Frank A. Morrow, Senior Co-ordinator, Crime Statistics, DBS, in a paper presented last year to the 17th Annual Conference of the Maritime Association of Chiefs of Police.

Mr. Morrow went on to point out that the need for police statistics is every bit as valid in improving law enforcement as are the statistical needs of government, business, and industry. Police administrators and others involved in the administration of justice need to be reliably informed at all times of the nature and extent of crime, traffic law enforcement and traffic accident problems, what is being done about them and where efficiency may be increased.

Police statistics can reveal a great deal about the known crime universe. They cover a wide range of offences including murder and shoplifting, sex offences, public mischief or wilful damage, armed robbery and muggings, discreet and delicate swindles. Persons of all ages are involved as victims or offenders and no community is immune. The range and scope of these activities are best known to the police who should accept as a duty and responsibility the provision of information concerning these problems.

The history of police statistics in Canada was outlined by Mr. Morrow who said that the manual of instruction for use of police respondents sending data to DBS is acknowledged as a model of its kind. The manual was developed by the Uniform Crime Reporting Committee which was set up by the Canadian Association of Chiefs of Police and DBS and includes representatives of the federal, provincial and municipal police forces as well as by members of DBS.

Because Uniform Crime Reporting is a far reaching program there is a need for a continued emphasis on the fundamentals to ensure a high degree of uniformity and accuracy in reported data.

The need for integrated statistics relating to the whole judicial process was discussed by Mr. Morrow who said that data on police arrests must be comparable with data on courts, jails and penitentiaries.

Mr. Morrow's talk concluded with predictions about future developments in Police and Crime Statistics.

Enquiries should be sent to Mr. Frank A. Morrow, Senior Co-ordinator, Crime Statistics, Health and Welfare Division, DBS, Ottawa.

World Power Conference hears Outline of Energy Statistics in Canada

Canada's per capita energy consumption is the second largest in the world, and Canadian consumption of energy is growing considerably faster than is the population. These are among the facts presented to the World Power Conference by Robert L. Borden, Chief Energy and Minerals Section, of DBS in a paper titled, "Concepts and Principles of Energy Statistics of Canada". The Conference was held last September in Moscow.

Energy supply-demand tables by Canadian regions, showing eighteen different energy forms, have been compiled by the DBS Energy and Minerals Section for the years 1958 and 1964. These formed the basis for most of the information provided in Mr. Borden's paper. The paper also described the creation of the tables. Some of Mr. Borden's remarks about the tables are condensed here.

The basic aim of any analysis in the energy economy in any given region is to provide data to measure the supply-demand position and thereby to help in forecasting energy needs and supply. This forecasting is valuable in three specific fields: First, in the energy supply industry itself which must try to ensure that future supply will be in the amount and form required by the ultimate consumers; second in the planning activities of peripheral industries such as household appliance manufacturers; third to government in formulating policies – both economic and political – in the sphere of energy supply. For example, it is obviously important for a nation to assess its dependence on non-indigenous supplies in terms of balance of payments and international politics. Also, governments should be vitally concerned with assessing which particular consumption sectors are making the greatest demand on energy supply in order to decide whether or not it is possible to influence the demand pattern and whether or not supply can be channeled from sectors less important economically to sectors which are more important.

Energy supply-demand tables represent an attempt to balance energy availability with energy needs in sufficient detail for analysts to consider the numerous and complex inter-relationships which exist between the primary and secondary energies. It is only when these inter-relationships are known that the problems involved in balancing requirements with resources for a future period can be determined.

Energy balance sheets must show:

(a) Total energy requirements from each consuming sector and the share each energy form, both primary and secondary, enjoys in satisfying these requirements;

(b) The amount of primary energy needed to produce these primary and secondary forms.

Demand is the starting point of the analysis and is the main determinant of the shape of the energy balance sheets. By analysing data on the recent past, trends of consumer demand for energy can be established and with this information the attempt can be made to estimate how such trends may develop in the future. From this, the level of demand for any given future year may be estimated. From this point, it becomes possible to follow the intricate path through conversion, process losses, transmission losses, and so on, to arrive finally, at the gross supply requirements of the primary energy forms.

The energy balance sheet is a representation of what has actually happened, and, subject to certain limitations which Mr. Borden outlined in his paper, it is possible to extrapolate from the past into the future, using purely mathematical tools such as linear regression.

DBS is now preparing supply-demand data for years between 1958 and 1964. These should be available in preliminary form in 1969. Future work will include an attempt to introduce supply-demand price schedules into the study to provide further information on the interrelationships of demand, price, and intra-energy competition.

Enquiries should be made to Mr. R.L. Borden, Chief, Energy and Minerals Section, DBS, Ottawa.

International Economic Association Holds 3rd Congress

"The Future of International Economic Relations" was the theme of the 3rd Con-

gress of the International Economic Association held at the Queen Elizabeth Hotel in Montreal, September 2 to 7.

Eight papers dealing with international trade were delivered. These were: "The Theory of International Trade", by Harry Johnson, London School of Economics and Chicago, "International Trade in a Non-Laissez-Faire World, by G. Ohlin, Stockholm; "The Problems of the Common Market", by A. Marchal, Paris, "International Liquidity and Basic Mechanism Reform", by T. Scitovsky, Berkeley, California, "International Trade and the Developing Countries", by H. Myint, London School of Economics, "The Problems of East-West Trade", by I. Vadja, Budapest, "East-West Trade", by A. Nove, Glasgow, and "The Development of External Economic Relations of the Soviet Union", by T.S. Khachaturov, Moscow.

Copies of these papers can be obtained from L. Fauvel, Secretary General, International Economic Association, Faculté de Droit et des Sciences Economiques, 92 rue d'Assas, Paris 6, France.

Municipal Finance Statistics Committee Holds first Meeting

An even more effective link between users and suppliers of municipal finance statistics is expected to result from the DBS Advisory Committee on Municipal Finance Statistics, which held its inaugural meeting on October 9, 1968 in Ottawa. Chairman was George A. Wagdin, Director-General of the DBS Financial Statistics Branch.

The present DBS municipal statistics program and its projected development will be considered by the Advisory Committee which will recommend modification and additional requirements predicated on the members' points of view as users.

Membership of the Committee comprises representatives of the federal and provincial governments, municipal research organizations, and the universities, and DBS. The inaugural meeting discussed possible additions to membership – for example municipal economists and planners – and further working procedures such as regional meetings. Also, members were given a brochure on the proposed development of the DBS program and were invited to submit their comments prior to the committees next meeting, to be held early in 1969.

The DBS Advisory Committee on Municipal Finance Statistics stems from the Conference on Municipal Statistics held at Queens University, Kingston, Ontario, in May 1966. One of the recommendations of that conference was that an advisory committee on municipal statistics be established to examine "the complete range of user needs in the field of municipal finance and to advise the Dominion Bureau of Statistics and other Canadian agencies issuing statistics on the best ways and means of satisfying these needs".

Information about the DBS Advisory Committee on Municipal Finance Statistics was provided by Mr. A.G. Kerr, Chief, Local Government Section, Governments Division, DBS, Ottawa.

Social Scientists Discuss Use of Census Printouts and Tapes

Enumeration area computer printouts for Alberta, Yukon, and the Northwest Territories, and computer tapes for the whole country containing data from the 1961 and 1966 Censuses have been acquired by the Population Research Laboratory of the Department of Sociology, University of Alberta, from the Dominion Bureau of Statistics.

A data-use workshop, jointly sponsored by the Sociology Department of the University of Alberta and the Alberta Bureau of Statistics was held on October 24 and 25, 1968, to describe these printouts and tapes to indicate how they might be used by social scientists. Consideration was also given to content of the 1971 Census as well as to future possibilities in data availability and retrieval. The work shop was attended by 96 persons, 23 of whom delivered papers.

The first session was devoted to discussion of enumeration area printouts. Dr. K.J. Krotki of the Department of Sociology, University of Alberta, formerly of the Dominion Bureau of Statistics, and prime mover behind the workshop, led off the discusion.

Dr. Krotki indicated that the ideal use of enumeration area printouts, is in local studies of small areas involving characteristics available in the printouts. Enumeration areas can be used as building blocks for the creation of areas with different boundaries than those for which data are available in standard census publications. He described several ways of using enumeration area data to derive "user-designed areas". The first is to "define the area of one's interests in terms of enumeration areas of one of the Censuses". He felt that "enumeration areas are so small that no serious study is likely to hinge on the inclusion or exclusion of areas smaller than enumeration areas". The other method is to use enumeration areas as given but make adjustments to the overlapping of enumeration areas beyond the boundaries of the area studied.

Several papers were then presented describing how area printouts have been used. They included:

1. Study of Health Care Resources and Use
2. Community Development Research Project
3. "Royal Commission" type of stud
4. Thesis Material

Mention was made that such data be used for drawing samples, compa samples with a population, in combinatio with other data, or as a major source of data.

The second session was devoted to discussion of possible uses of the data available on enumeration area computer tapes. Dr Krotki stated that it will probably be at least one year before the research laboratory personnel will be able to retrieve information from these tapes with ease. The major use of these tapes will be in studies of user-designated areas considerably larger than enumeration areas, and national or regional studies through rep The advantage of the tapes is that they allow for many tabulations and a great deal of flexibility in delineating area boundaries.

The use of the enumeration area tapes is much more complicated than the use of enumeration area printouts. However, a standard program has been developed to use information from the tapes once it has been retrieved. This program, SPSS (Statistical Package for Social Sciences) makes it unnecessary to write a new program every time information from the tapes is to be used.

The third session involved retrieval and data storage for the 1971 Census of Population and Housing. During this session representatives from Dominion Bureau of Statistics, Dr. I.P. Fellegi and Mr. R.J. Davy, discussed various aspects of the 1971 Census. Dr. Fellegi described and discussed Geocoding in both urban and rural areas. He also discussed "accuracy checks" that occur in censuses. He described some of the

implications of sampling for the 1971 Census and made the point that sampling reduces the total error that would otherwise creep into the Census if 100% coverage for all questions were practised.

Mr. R.J. Davy discussed the content of the 1971 Census. He discussed self-enumeration, which is to be used extensively in the 1971 Census and is expected to improve quality of the answers because, in the first place it should eliminate enumerators' bias and secondly, the person who is best able to answer particular questions will do so. A problem has occurred in the past, particularly on income questions where the wife has very often answered such questions incorrectly.

A number of papers were presented discussing the 1971 Census as applied to such disciplines as economics, education, sociology, political science and geography. A number of suggestions were made as to questionnaire content. For example, some felt that questions in the housing section should be eliminated and others substituted. Mr. Davy pointed out, however, that at this late date it would be difficult to make changes in the questionnaire.

In the fourth session, Dr. T. J. Vander Noot, formerly with the Economic Council of Canada and now with DBS, described the CANSIM system, its content, cost and method of updating. This is an integrated storage and retrieval system which will have as its content many, if not most, of the time series published by DBS.

Record linking of census data with local surveys and administrative records was also discussed. A number in attendance at the meeting felt the potentialities of record linking were so great that it should be developed.

This Data-Use Workshop proved useful because a number of people involved in research in the social sciences were made aware of enumeration data for the first time. It was also valuable to the extent that those attending became aware of the uses and limitations of enumeration area data in particular, and census data in general. Participants were also informed of some of the problems faced and solutions offered by the Dominion Bureau of Statistics.

Information on the workshop was supplied by D. H. Sheppard, Supervisor, Market Research, Alberta Bureau of Statistics, Room 1529, Centennial Building, Edmonton.

Conference on Manpower Mobility Held at Cornell University

A conference on the mobility of highly trained manpower in the United States, Canada and Europe was convened at Cornell University, October 31 to November 2, 1968. A session on Data Sources was chaired by Dr. Sylvia Ostry, Director, Special Manpower Studies and Consultation, DBS.

Six papers were presented at this session of which five were devoted to discussion of the rich and varied sources of statistics on high level manpower, available in the United States. The impression left by these papers is that a veritable researcher's paradise exists in this area in the U.S. and, at other sessions at the conference, a number of substantive papers presented provided evidence that the information sources are beginning to be well exploited.

The Canadian Data situation, ably summarized in a paper by W.R. Dymond and K.V. Pankhurst of the Department of Manpower and Immigration, is, in contrast, characterized by a serious paucity of information although a start is being made to rectify this in a variety of ways. In the United States the original impetus to greatly expanded data collection in this field stemmed from the federal government's interest in science policy, particularly as it related to the utilization of manpower and expenditure of research and development funds in defence and space projects. In Canada, this impetus has, until now, been lacking.

At another of these sessions, Dr. Leroy O. Stone, Consultant on Demographic Research at DBS, presented a paper entitled "Vital Processes and Passage Time Parameters in the Cornell Mobility Model". The purpose of the paper was to review some of the major gaps in the discussion of a mathematical "model" for mobility analysis which has been developed by Robert McGinnis and his associates at Cornell, and to point up some avenues which might prove useful in filling these gaps. Requests for information about this paper should be directed to Dr. Stone at DBS.

Market Research Handbook for 1969 To be Available in Late Summer

Following the four decennial censuses undertaken from 1931 onwards, four marketing data books were published by DBS. The change to the quinquennial census system in 1966 opened up the possibility of bringing out such a handbook every five years rather than every ten years as in the past. The first volume of this new five-year series, compiled by the Merchandising and Services Division, will be on sale in late summer. It is a new publication in more than one sense, the result of a critical reappraisal of scopes and objectives. In assessing the requirements of the new Handbook, the Merchandising and Services Division relied not only on other DBS divisions, but also contacted a number of market research consultants for opinions about the previous edition and for suggestions on possible improvements. From this mutual exchange of views, new principles emerged.

It was agreed, first and foremost, that the Handbook should not be based solely on data collected in the course of the latest census, but should also utilize the vast array of marketing information of gleaned by various DBS current surveys. Because of this, the new Handbook will incorporate both Census and current survey data. The inclusion of current survey data for 1967 and 1968 makes the new Market Research Handbook not only more complete but also more up-to-date because the time lag between the collection and publication of data is generally shorter for current surveys than for the census. The reader will be able to find, for example, 1968 data on various household facilities and equipment such as hot water supply, refrigerators and freezers, heating equipment, automatic dishwashers, and so on.

Another improvement on the previous edition is that instead of presenting the static picture of a certain year, the New Handbook will indicate trends by comparing data for different years. Depending on the importance and availability of data, many tables will show 1961 data side-by-side with comparable figures for 1966, 1967 and 1968. This sort of presentation is intended to help the market analyst in assessing the dynamic aspects of certain subject matter areas. The consumer acceptance of automatic dishwashers, for example, can be studied by comparing the 1961, 1966 and 1968 data.

The new Handbook is divided into two parts. The first summarizes available marketing statistics in about eighty tables, while the second half of the book is devoted to small area statistics related to countries, metropolitan and major urban areas, and cities and towns, with a population of 15,000 and over.

Special attention has also been given to the layout and format of the new publication. It is being printed with large type in two colours with more than 400 pages of text, tables, maps and graphs.

The Market Research Handbook, (Catalogue No. 63-514 Occasional) will be available from the Queen's Printer or the Dominion Bureau of Statistics at a price of $5.00 per copy. Further information can be obtained from Dr. Laszlo Sonkodi, Chief of the Wholesale Trade Section, Merchandising and Services Division, DBS, Ottawa.

Four New Studies Issued by DBS In 1961 Census Monograph Program

Four new studies in the 1961 Census Monograph Series have been completed since the previous issue of the *Statistical Observer.* These are:

1. *The Female Worker in Canada* – Catalogue 99-553/1968-$1.00. This 65-page study by Dr. Sylvia Ostry, Director, Special Manpower Studies and Consultation, DBS, reviews, insofar as data permit, the historical trends in the labour force activity of women over the course of this century. In particular, it focuses on the married women who have entered the labour market in increasing numbers in recent decades and whose activity, in this respect, is a matter of widespread interest both for economic as well as social and cultural reasons.

The study consists of three main sections. The first comprises an examination of the working life cycle of women in Canada – a profile of labour force membership by age and other demographic characteristics. The second part of the study considers the influence of other variables on the labour market behavior of women. The section compares the participation rates of women grouped according to selected characteristics such as their educational level, the income of their husbands, whether or not their husbands were fully employed over the year, and so on. In the third section, male-female earnings relativities, as revealed in the 1961 Census are presented.

2. *Working Life Tables of Canadian Males* – Catalogue 99-555 – 75¢. This study by Frank T. Denton formerly of DBS and now professor of economics at MacMaster University, and Dr. Sylvia Ostry, provides tables which show the life expectancy of males at any given age broken down into the expected number of years that they are likely to remain in the labour force and the expected number of years of retirement. Data is for the census years 1931 through to 1961 for Canada and for 1961 for the regions.

3. *Geographic Composition of the Canadian Labour Force* – Catalogue 99-554 – 75¢. In this, the last of the Monograph series of labour studies by Dr. Sylvia Ostry, differences between the provinces in respect to their labour force composition are examined and compared, taking into account the differing social, economic and industrial structures of the provinces.

4. *Incomes of Canadians* – Catalogue 99-544/1968 – $3.00. This study by Jenny R. Podoluk, Co-ordinator, Consumer Finance Research, DBS, undertakes, in over 350 pages, to analyse various aspects of the income size distribution in Canada. Sources are published and unpublished data collected for the 1961 Census of Canada and the Surveys of Consumer Finances for selected years.

Income statistics have a multiplicity of uses. These, and the development of income statistics are discussed in Chapter 1, the Introduction. Since it is not possible to explore in a single volume all possible facets of income statistics, the study is restricted to a description of selected broad features of the Canadian income distribution.

The focus is on two series of income statistics: those of individuals, and those of family units. Following chapter 2, which is a summary, chapter 3 consists of an examination of the income distribution of the adult population – the sources of such income and the factors influencing such income. The most important source of income or the main determinant of income levels is income from employment, and chapter 4 examines labour force participation and the characteristics that affect the level of earnings such as occupation, age and education. Education is possibly the most significant variable that influences earnings and chapter 5 considers the relationship between private investment in education and the returns to education.

Many individuals in receipt of income are not heads of families but secondary contributors to family income, for example, working wives. The inter-relationships between individual incomes and family incomes are explored in chapter 6 and some of the characteristics of the family – income distribution and the family-income cycle are examined. The factors influencing regional differentials and both individual and family incomes are discussed in chapter 7.

The problem of poverty and its causes is a chronic one, even in Canada which has one of the highest income levels in the world. Chapter 8 discusses the statistical problems in defining poverty and focuses on those characteristics of the low-income population that may be attributes of poverty. It is well recognized that there is a strong correlation between age and low income and Chapter 9 provides a detailed analysis of the income of the aged who constitute an important segment of the low-income population.

Chapters 10 and 11 are devoted to special aspects of the income distribution – changes in the income distribution in the 1950s, income inequality in Canada and the role of government policy in redistributing incomes. The appendices to the monograph include explanations of concepts and methodology, evaluation of censuses and survey data, and discuss the relationships and comparability of various official income series.

Monograph studies can be purchased from The Queen's Printer, Ottawa, or any Canadian Government

New Service Bulletin Published By Aviation Statistics Centre

Quick release of timely statistics produced from surveys conducted by the Aviation Statistics Centre on behalf of the Department of Transport, the Canadian Transport Commission (Air Transport Committee) and the Dominion Bureau of Statistics is the aim of the recently introduced *Aviation Statistics Centre Service Bulletin.*

The service bulletin was introduced because inquiries received by the Aviation Statistics Centre indicated that, increasingly, statistical data heretofore compiled only for the use of the department of transport or the Canadian Transport Commission is needed for planning a wide variety of services directly related to airports and other air

service facilities. Inquiries indicate that such diverse users as urban planners, hotels, caterers, advertisers, aircraft manufacturers, aircraft services, and the air transport industry itself can benefit from release of summary information contained in the new service bulletin.

The service bulletin reports such matters as aircraft operating costs, specialty flying services, and aircraft movement statistics at various Canadian airports. Issues are intended to illustrate the type of information available, giving, if necessary, a short description of the source surveys and the major limitations of the data, together with statistical data of general interest. Later, historical tables will be provided on those subjects on which suitable series have been developed. Suggestions for topics of broad interest are most welcomed by the Aviation Statistics Centre.

A subscription to the Aviation Statistics Centre Service Bulletin can be obtained from Miss I.J. Forgie, Aviation Statistics Centre, 12th floor, ConGill Building, 275 Slater St., Ottawa 4, Ontario.

Quebec Bureau of Statistics Publishes First Annual Agricultural Data volume

Agronomists, economists, manufacturers, farmers and all others interested in Quebec agriculture statistics for analytical or research purposes will want a copy of "Agricultural Statistics – 1968" a new publication of the Quebec Bureau of Statistics.

The publication will appear once a year and presents, in a single volume designed to complement bulletins issued periodically by the Quebec Bureau, comprehensive agricultural statistics originally published by DBS, the Quebec Bureau of Statistics, and data not previously published.

Information in the 280-page bilingual book is grouped under five headings: (1) General statistics, (2) Crops, (3) Livestock and animal products, (4) Processed farm products, and (5) Agricultural censuses.

Agricultural statistics – 1968 is available for $2.00 from the Quebec Official Publisher, Parliament Building, Quebec, Canada.

Manitoba's Economy Described In New Provincial Publication

Manitoba's basic resources, factors of production, and development are described in a 50-page report titled "The Economy of the Province of Manitoba" issued by Manitoba's Department of Industry and Commerce. The publication will be particularly useful to businessmen who want an understanding of Manitoba's economy and of the basis for the province's growth and development. Descriptions of the sectors in Manitoba's economy will also interest students of business and economics.

Beginning with physical environment, the report goes on to describe human and natural resources, and then Manitoba's sectors of primary, secondary and tertiary industries. Several tables relating to economic development from 1960 to 1967 inclusive are included in the final section, as well as a number of other tables found throughout the report.

The Economy of the Province of Manitoba can be obtained from the Department of Industry and Commerce, Province of Manitoba, Legislative Building, Winnipeg.

Automotive Industry Facts and Figures Highlighted in Association Booklet

Automotive industry facts and figures from various sources are collected and presented in a useful 40-page booklet issued each year by the Motor Vehicle Manufacturers' Association. Forty-seven statistical tables are assembled and prepared with the assistance of DBS, the provincial registrars of motor vehicles, R.L. Polk & Co. (Canada) Ltd., and the Automobile Manufacturers Association. These show: performance of the Canadian automotive manufacturing industry; exports and imports; retail trade; registrations; tax revenue from and tax rates on vehicles and motor fuel; motor fuel sales; street and highway expenditures and mileages; accident trends; and the most important automotive statistics from other countries. As well, there is a table showing automotive industry record achievements, a listing of provincial government motor vehicle administrators, and a list of automotive industry associations. Three pages are devoted to historical highlights of the Canadian Automotive industry.

In addition to the annual booklet a monthly report is prepared showing main monthly and year-to-date industry statistics. *Facts and Figures of the Automotive Industry – 1968 Edition* is available from the Motor Vehicle Manufacturers' Association, 25 Adelaide Street East, Toronto 1, Canada.

Report Predicts Admissions to Psychiatric Institutions

Expectation of a person of given age and sex becoming an inpatient in a Canadian psychiatric facility sometime during their life is shown in a special analytical report published by the Health and Welfare Division of DBS. Expectations are based on first admission and mortality rates prevailing in 1965. No assumption is made as to what rates will actually prevail in future years, so that results of the report cannot be treated as projections.

Rates of admission to psychiatric institutions increase with age. On the other hand, the expectation of admission declines with age, because for some members of the population at risk, death intervenes. The expectancy measures quoted in the report are thus not simply measures of the risk of mental disturbance leading to admission as an inpatient to a Canadian psychiatric institution, but are measures of this risk *and* the risk of dying, these two components bearing an opposite relationship to the expectancy measure. No attempt has been made to provide the conditional expectancy measure, that is, the probability that a person of a specified age will be admitted to a psychiatric institution by a specified later age if he lives to that more advanced age. The answer to this question has been left for possible presentation in a second paper.

The 40-page bilingual publication shows expectancy measures by province, sex and for each year of age. Mental retardation is shown separately from all psychiatric diagnosis combined.

Mental Health Statistics – the Expectation of Admission to a Canadian Psychiatric Institution, Catalogue 83-506 – 50¢ can be ordered from the Publications Distribution Unit, DBS, Ottawa. For information about method of calculation and input write to the Mental Health Section, DBS, Ottawa.

Canadian Study of Smoking and Health

If you want to continue enjoying cigarettes, you should not read "A Canadian Study of Smoking and Health". But if you want to examine the evidence for current concern about the smoking-health relationship, you will be interested in the 140-page report.

A Canadian Study of Smoking and Health is not a new report – it was issued in 1966 – but it is nevertheless still topical especially in view of the current upsurge of interest in this subject. Portions of the research done during the Canadian study were corporated into the well-known U.S. Surgeon General's Report.

Purpose of the Canadian Study was to investigate the relationship between residence, occupation and smoking habits, and mortality from chronic diseases, particularly lung cancer. It was initiated by a questionnaire which was sent to Canadian Veteran Pension recipients during the period September 1955 through June 1956. Returns from 78,000 men and 14,000 women, mostly widows, were analysed. The age of most of the men at the beginning of the study ranged from 30 to 90 years and the distribution was characterized by the ages of men eligible for service in the two world wars.

For each respondent dying between July 1, 1956 and June 30, 1962, the cause was related to information on his questionnaire about age, history of smoking habit, residence and occupation. Among the respondents during the six years of follow-up were 9,491 deaths of males, and 1,794 deaths of females.

For each group of smokers, the number of deaths that could have been expected if they had never smoked was calculated from the corresponding age specific death rates of non-smokers. This "expected" number of deaths was compared in two ways with the number of deaths actually observed. First, the number of "excess" deaths of smokers was determined by substracting the "expected" number deaths from the observed number of deaths in the various groups of smokers. Secondly, the mortality ratio was determined by dividing the observed number of deaths by the "expected" number of deaths. This mortality ratio is essentially a comparison of age specific death rates of smokers and non-smokers; the higher the ratio, the greater the risk of death to individuals within a smoking category compared to the non-smokers.

Results are compiled in the report which is composed mainly of tables but contains also a full description of methodology.

A Canadian Study of Smoking and Health is available from the Smoking and Health program Department of Health and Welfare, Tunney's Pasture, Ottawa, Canada.

Qualified Manpower in Ontario, 1961 - 1986

A summary of *Qualified Manpower in Ontario, 1961-1986,* Volume 1, by Cicely Watson and Joseph Butorac, as mentioned in the previous *Statistical Observer,* has been issued by The Ontario Institute for Studies in Education. This 35-page synopsis can be read relatively quickly and will be appreciated by many who are interested in the subject but who do not require the detail contained in the original lengthy publication which is intended mainly for reference.

A Summary: Qualified Manpower in Ontario, 1961-1986 is available for one dollar (free to purchasers of the complete volume 1), from the Ontario Institute for Studies in Education, 102 Bloor St. W., Toronto 5, Ontario.

First Survey of Community Antenna Television Industry in Canada Released

The first report of an annual series on the community antenna television (CATV) industry in Canada has been published by the Transportation and Public Utilities Division of DBS. The report has been produced to present industry – wide statistics on an important and rapidly expanding segment of the communications field.

Information in the report is based on questionnaires mailed to all Canadian CATV Companies. The publication includes information on wireline facilities, subscribers and employee statistics by area, operating revenue and expenses by area and revenue group, and income account, surplus account and a statement of assets, liabilities and net worth.

A community antenna television station is defined as a system for receiving signals from broadcasting stations and distributing them by cable to subscribers.

Inquiries should be directed to Mr. J.R. Slattery, Transportation and Public Utilities Division, DBS, Ottawa.

Glossary of Broadcasting Terminology

A glossary of broadcasting terminology is included in "Radio and Television Broadcasting, 1967, DBS Catalogue No. 56-204". The glossary was developed by the DBS National Advisory Committee on Broadcasting Statistics to provide those interested in broadcasting with a basic knowledge of the vocabulary used in the industry as well as definitions of some of the words and phrases which are often incomprehensible or confusing to those outside the broadcasting field. It is planned to publish the glossary at 5-year intervals.

Lacking Vol.2, nos. 2-4

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STATISTICAL OBSERVER

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The Statistical Observer is a publication designed to contribute toward informing economists, statisticians and related professionals throughout Canada about selected statistical and research developments undertaken in DBS, in other Federal departments and agencies, in provincial departments, in universities and in business and independent research organizations.

Suggestions and contributions of articles for publication should be addressed to the Editor, Statistical Observer, Information Division, DBS, Ottawa 3, Canada.

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Plans for the 1971 Census of Canada

The 1971 Census of Canada will be markedly different from previous decennial censuses in three major ways: It will be conducted largely on a self-enumeration basis; more extensive use will be made of sampling techniques; and questionnaires have been designed to provide more statistics of higher quality than resulted from all previous censuses.

The following paper by W.D. Porter, Director of the DBS Census Division, explains the changes.

Importance of the 1971 Census

The increasingly complex problems of modern-day planning, administration, and research, in both the public and private sectors, have led to a substantial escalation in the demand for census information. More statistics will be expected from the 1971 Census than from any previous census. Regional development planning, urban renewal projects, education and manpower programs, poverty and welfare assistance measures, and market research analysis, are some of the fields in which increasing needs of users have been articulated and evaluated during the planning stages for the 1971 Census.

The Canadian Census of today has far wider uses than its original purpose of apportioning electoral representation. Its importance hinges on its role as an inventory of the people – their numbers and local distribution, age and sex, language, ethnic and religious composition, educational attainment, occupational and industrial employment, income levels, housing and agricultural conditions. These facts are not only vital in themselves but they are especially significant when derived from a census which permits their analysis in relation to one another, and when viewed against the background of history and natural environment.

Census data form a standard by which other indicators relating to the nation's well-being can be measured with real meaning (e.g., birth and death rates, criminality, production, trade, wealth, unemployment, migration). Of critical significance are the uses made of the census results in the development of plans and the formulation of social and economic policy by government departments and the business community.

Content of Questionnaires

In establishing the questions for the 1971 Census, planning committees and work groups worked closely with representatives of other federal departments and agencies, many of whom were active participants in these groups. Careful consideration was given also to submissions received from provincial statistical agencies and from nongovernmental agencies representing the business community, universities, town planning experts, and other users of census data.

Decisions to include or exclude specific items in the 1971 Census were largely based on: (1) the value of a question, e.g. for the administration of government or other important needs; (2) relative cost; (3) the ease or difficulty in obtaining reliable data; and (4) respondent work loads and tolerance. The evidence available from almost three years' investigation of user needs, and evaluation of a field testing program indicate that the 1971 questionnaire content represents a judicious balancing of the essential criteria: it will satisfy the needs of users without imposing an unacceptable burden on respondents.

Population and Housing – Changes in the questions for the 1961 Censuses of Population and Housing that have been recommended for 1971 result mainly from demands for more detail within existing subject fields. Education questions have been expanded to include vocational and occupational courses; net income of persons operating farms has been added; a question on language commonly spoken, recommended by the B & B Commission, has been added to those on mother tongue and official language; transportation agencies and town planners have effectively argued for inclusion of a question on address of place of work to determine relationships between where people work and where they live. Additional questions have been included on rent, fuel used, and vacation homes.

Agriculture – The Census of Agriculture is taken at the same time as the Censuses of Population and Housing. Questionnaire planning for the 1971 Census of Agriculture began in 1967 with the formation of a federal interdepartmental committee. During early 1968, meetings were held with provincial representatives in each province, with university users, with the federal Department of Agriculture, and with the Statistical Committee of the Farm Equipment Institute. Recommendations were reviewed by the interdepartmental committee and the resulting questionnaire was field-tested in October 1968.

In the 1971 Census of Agriculture, one general questionnaire is planned to replace the four questionnaires used in 1961. Irrigation questions and questions on forest products (on a reduced basis) form part of the general questionnaire for 1971. New questions relate to the use of fertilizers and sprays, and to the classification of the part-time work of farm operators by kind of work done. Additional items of farm machinery and equipment are included in the appropriate questions.

In the summary, farm operators will have approximately the same number of agricultural questions to answer in 1971 as in the preceding decennial 1961 Census. The questionnaire on non-farm holdings is being dropped since their importance is now negligible.

General Methodology

The development of the proposed methodology for the 1971 Census received its initial impetus from the evaluation of the quality of the 1961 Census and from the study of similar international experience, particularly in the United States. This research identified several important sources of error to which census statistics are subject. Respondents may inadvertently or deliberately provide erroneous information. Enumerators may influence answers in a number of damaging ways. Additional errors are possible at the data processing stage. The studies indicated that by far the largest reduction in error could be expected

if the role of the enumerator in the data collection process was minimized.

Development of "Self-enumeration" Techniques – From the foregoing studies, it became an objective of the 1971 testing program to develop methods that would reduce the role of the enumerator. These methods, involving self-enumeration, have several variations, but a common goal is to have each adult member of every household answer the census questions pertaining to himself, and where necessary to consult relevant records. Households or persons who do not answer the census questions or who make significant omissions are contacted by telephone or canvassed by an enumerator.

The "do-it-yourself" technique of enumeration is preferable to the traditional method where the enumerator must ask, interpret and record quick answers to intricate questions, given for all members of the household by any responsible member whom the enumerator happens to contact at home.

A small proportion of the population cannot, however, be covered by self-enumeration techniques. These include, for example, the people in the vast northern regions, the coastal outports, institutions, and military barracks, all of which present special problems requiring traditional canvasser methods.

Field Testing Program – A series of census field tests, starting with a small pre-test in Ottawa in December 1966, followed by a complete test enumeration of the city of London in September 1967, a test of 6,000 households in Toronto in June 1968, and a rural test in four representative localities across Canada in October 1968, was designed to investigate the merits of various field methods for the 1971 Census.

Two of the tests assessed the advantages of self-enumeration, with questionnaires mailed to all householders for their completion and returned by mail to a central processing office. In the rural test, a combination of the traditional interview method and enumerator "drop-off" and "pick-up" of questionnaires was employed.

Response rates in these various field tests indicated the feasibility of employing self-enumeration techniques. A trial Census, or full-scale dress-rehearsal was held in September 1969 in three localities: Sherbrooke, Quebec; St. Catharines, Ontario and the rural areas around Souris, Manitoba. As a result of this intensive testing program, field plans for the 1971 Census call for a system of enumerator "drop-off" of self-enumeration questionnaires to the householders for their completion and "mail-back", to be employed in the larger urban centres. In smaller centres and rural areas, enumerators will drop off the questionnaires (including agriculture, where applicable) and will return to pick up the completed forms.

The Use of Sampling

Self-enumeration and extensive sampling in 1971 appear to offer the best combination to achieve the basic aims of the census in terms of cost, quality, and timeliness of the data.

New field methods have, as a main objective, the production of data of higher quality through the use of self-enumeration techniques. The degree to which sampling will be employed is directly related to the reduction of costs and to the production of more timely results. Sampling will contribute to error, particularly for tabulation "cells" with very small numbers of observations, but the reduction in error through self-enumeration is expected to be greater. The objective is to minimize total error, at acceptable cost. Sampling, it is expected, will make a relatively small contribution to total error, will significantly increase operational efficiency and control, and reduce cost. Also, by reducing the editing and processing work load, sampling should make a major contribution to the timely release of census results.

Sampling is also an essential technique in reducing the burden on the respondent. There have been strong pressures to expand the range of inquiry of the census. Without sampling, additional questions could not have been included in the 1971 Census, partly because of the additional processing burden that would be imposed on DBS, but also because of the response burden which would be imposed on the public.

Sampling has been used as a census-taking technique in Canada since 1941. At that time, its use was restricted to the collection of housing data and a sampling ratio of 10 per cent was employed. The procedure proved to be effective and was extended to a 20 per cent ratio in 1951 to provide additional geographical detail. In 1961, its use was further extended to population questions, and a sample of 20 per cent of households was asked additional questions about income, migration and fertility.

A major extension of this technique will be used in the 1971 Census employing two questionnaires. A "short" questionnaire, containing just six basic population questions, to be answered by everyone, and nine housing questions, to be answered by household heads, will be completed in two thirds of all households in Canada. A "long" questionnaire containing the same 15 basic questions, 20 housing, and some 50 socio-economic population items will be answered by the remaining one third of Canadian households. Thus, compared to the 1961 Census, two thirds of all households are being asked substantially fewer questions (averaging eight per person as compared to 20 in 1961), and only one third are asked significantly more questions (averaging 48 per person as compared to 36 in 1961).

A great deal of intensive investigation into the relative costs and benefits of alternative sampling ratios for different combinations of questions preceded the final decision to recommend a 33 1/3 per cent sample for all but the basic questions. The more extensive use of sampling is not expected to reduce the availability of 1971 Census statistics as compared to 1961, for either small geographic areas or detailed cross-classifications.

Small numbers – five, 10 or even 15 – contained in census tabulations have significant error associated with them. The error contributed by sampling will not make results any less acceptable than the results from 100 per cent coverage. Even where the data are found by the user to be inadequate, they will frequently be sufficient to indicate problem areas and the need for more intensive survey information.

By its nature, the census is a multipurpose information medium and, as such, cannot provide a sufficient depth of data for many particular purposes. This is one of the important reasons that DBS is planning to expand its survey capability to meet special information requirements that cannot be satisfied by census statistics.

Data Access and Dissemination of Results

Plans have been made to improve the effectiveness of the storage and retrieval of census data substantially over 1961 and 1966. The computer technology which is available for the 1971 Census has far greater capability than that of earlier censuses. The computer experience of 1961 and 1966 is also being incorporated into the systems design, and software and hardware plans for 1971.

In the development of new methods, procedures and programs to improve effectiveness and efficiency in census data access by users, emphasis is being given to extending the range and volume of tabulations available in published, print-out, and machine-readable form. Close examination is being given to the preparation of working arrangements with provincial governments and other major user groups for efficient access to census statistical data through more extensive and comprehensive use of user-oriented census data automated files.

The extended capabilities of computer technology are also being used for the benefit of the continuously increasing number of census data users requesting a wide and diversified range of special tabulations by means of computer storage and retrieval programs such as the DBS Geographically Referenced Data Storage and Retrieval System (GRDSR or geocoding) and CASPER. The geocoding system, under development, is expected to provide rapid and economic access for users requesting special tabulations for non-standard types of areas.

More user-oriented literature, catalogues and manuals on census data access will be prepared in order to ease and increase the effective utilization of the vast potential of the 1971 Census data.

NEW PROJECTS

Census Data Collection Methods Under Study

Two major evaluation studies of Census data collection methods are being undertaken jointly by the Census Division and the Sampling and Survey Research Staff of DBS.

The Reverse Record Check is a project which is designed to determine the extent of underenumeration, the number of people missed during the Census enumeration, and to detect the kinds of people that tend to be missed. In the Reverse Record Check project carried out in connection with the last Census for example, it was found that as many as 10 per cent of the people in a certain age bracket were missed. Hence, this project identifies the problem areas so that they may be investigated to determine ways of reducing underenumeration in future censuses.

In addition, the data resulting from this project can be used in conjunction with the tabulated census statistics on population to obtain a more accurate indication of the population that the Census attempted to measure. There will be two or three extensive clerical operations involving searching, to determine whether or not certain people were enumerated, and a tracing operation of those who could not be found in the list of the enumerated people.

The Response Variance Study is to be undertaken so that an estimate of the reliability of published census data can be provided for certain characteristics. In the past, the published Census data have been taken as the absolute value of the reported characteristics. However, a respondent can be interviewed twice by the same person and be asked a question referring to the same time period, but give two different answers. In addition, since most of the census questions are asked on a sample basis (in the 1971 Census, only one third of the households will be asked to answer some 90 questions) there will be a variability in the estimates due to the sampling. Hence, the published census data not contain the absolute value for each of the questions. Since many of the users will be aware that sampling was used in the Census and some will even be aware that there is response variance they may well query the reliability of the published data. Since the present-day users of Census data are becoming more statistically oriented and are putting the Census data through more statistical tests, the users must be provided with some estimates of the reliability of the data they obtain from DBS.

Inquiries should be directed to G.B. Gray, Sampling and Survey Research Staff, DBS, Ottawa, 3.

Area Measurements Completed for Census Subdivisions

The Census Division of DBS recently completed the compilation of land area measurements of census subdivisions as of June 1 1966, the first readily available measurements based on a uniform method.

Most measurements were performed by planimeter except in the Prairie Provinces where the survey system does not warrant the use of such an instrument. Measurement was performed on maps with scales corresponding to population density, generally 1:50,000 and 1:250,000 in the settled areas and smaller scales in sparsely populated regions. In each case, the concept was of land area; water bodies were excluded where possible and an attempt was made to indicate the area of Indian reserves included in the census.

The census subdivisions are coded on the basis of the Standard Geographical Classification rather than the census code.

The publication of this data on base leaf pages constitutes provision for changes which occur for a variety of reasons, but especially from municipal boundary changes. Such changes will be incorporated in the listings on a periodic basis.

This uncatalogued information may be obtained from Geography Section, Census Division, DBS, Ottawa, cost: for complete set – $3.00 or $1.00 per region. Inquiries on the Standard Geographical Classification should be directed to: Central Classification and Company-Establishment Integration Staff, DBS, Ottawa, 3.

Expanded Survey of Consumer Finances

A new survey of incomes, assets and indebtedness, covering the year 1969 has just been completed. The survey was designed by the DBS Consumer Finance Research Staff and was conducted by the Special Surveys Division.

Although basically similar to the 1963 survey as reported in *Incomes, Assets and Indebtedness of Non-Farm Families in Canada, 1963* (cat. no. 13-525), a number of new features have been added. The sample size has been increased from 8,400 to 13,500 households and now includes farm families; new questions have been added on car ownership, contributions to pension funds and payments for life insurance premiums.

The family income part of the survey, as in similar surveys conducted in the past, will inquire into the size and sources of income of the family; sex and age of the head of the household, number of children; family characteristics; and tenure.

The survey will also gather information on asset holdings of families by size and composition of asset holdings at different family income levels; total assets held; age of family head; and other family characteristics.

The survey will also inquire into the debts of families and individuals, the type of debt contracted – consumer, mortgage or other debts – amounts outstanding and percentage distribution among the various income levels and age groups.

Inquiries should be directed to Mrs. G. Oja, Chief, Research and Analysis, Consumer Finance Research Staff, DBS, Ottawa, 3.

Publications Program Expanded in Aviation Statistics

A comprehensive review of the publishing program and the data collection procedures of the Aviation Statistics Centre of the Transportation Division of DBS has resulted in substantial improvement in timeliness in ASC publications and service to users of air carrier data. This review was prompted initially by the increasing burden imposed on the air carriers by the regulatory

nature, number and complexity of the questionnaires, and the need of the carriers themselves for more information and improved timeliness.

The first step in the review – an examination of the Civil Aviation Survey, a continuing survey conducted jointly by DBS and the Air Transport Committee of the Canadian Transport Commission – was followed by interviews with carriers to get first-hand information on all aspects of the survey as it affected their paper workload and their data needs.

With this information and with redefined government information requirements, questionnaires were revised so as to produce information on the basis of the type of operation of the carrier rather than on the basis of the size of the service. The result is that the same statement is completed by all carriers engaged in the same type of service regardless of the size of the operation. New statements were also designed to correspond as closely as possible to the air carriers' own system of keeping records.

The Fleet Survey is an example of the improvements resulting from the review. Formerly, each carrier had to list all his aircraft types quarterly. This placed an unnecessary burden on the respondents. At the same time, changes in individual fleets could only be ascertained by ASC by direct comparison of one quarterly list with previous lists. In the new program, which began in October 1969, each carrier is provided by ASC with a computer print out of his previous report with provision on it for updating. This new reporting procedure has reduced delinquencies in reporting by 90 per cent and has considerably reduced the work of compiling the information from reports of the carriers.

Developments on the publication side include three new reports: *Trans-Continental and Regional Air Carrier Operations* (cat. no. 51-001), is a new monthly publication specially designed to meet the needs of the two transcontinental and five regional carriers who are the largest users and the largest contributors of information to the industry. It provides operating statistics, and revenue and expense data for the seven carriers in both domestic and international services. It replaces the *Civil Aviation Monthly* (cat. no. 51-001).

Air Carrier Operations in Canada (cat. no. 51-002), gives a picture of the entire industry each quarter with year-to-date figures in each issue. The fourth quarter issue will carry figures for the full year and will replace the former annual report *(Civil Aviation, Preliminary,* (cat. no. 51-201).

International Air Charter Statistics (cat. no. 51-003), to be issued quarterly beginning later this year, will feature four double-scale charts summarizing the most important current factors in international air charter operations with figures for the previous year. It will also contain statistical information in summary form in cross-referenced tables with overlapping captions and stubs to facilitate interpretation. These data, hitherto unknown or not available, are of significant analytical value to the air carriers and regulatory bodies.

The Civil Aviation Annual Report (cat. no. 51-202), will be completely revised for the 1970 edition and will be issued as the Canadian Aviation Handbook. It will contain data on general aviation, air carrier activity, airport activity, origin and destination statistics and many other topics of general interest to the aviation industry.

Inquiries should be directed to G.E. Clarey, Chief, Aviation Statistics Centre, 275 Slater Street, 12th Floor, Ottawa 4.

Retail Price Differentials Now for 11 Cities

Measurements of retail price differentials prevailing between a number of Canadian urban centres previously published to reflect inter-city comparisons as at May 1965 and May 1968 have now been updated to May 1969. The cities of St. John's, Nfld., Charlottetown, P.E.I. and Saint John, N.B. have been added to the list of urban centres for which place-to-place comparative retail price information was presented earlier.

Differential price indexes for Regina, previously limited to foodstuffs, have now been extended to include non-food items. In the case of St. John's, Nfld., differentials for food items and a limited number of non-food items are shown, while for Saint John, N.B., the comparative retail price information is limited to foodstuffs.

As before, for most cities, comparisons are drawn for commodities and services comprising nearly three quarters of the budget on which the Consumer Price Index for Canada is currently based, with the major omission being shelter (both rented and owned).

For Halifax, Montreal, Ottawa, Toronto, Winnipeg, Regina (food items only), Edmonton and Vancouver, price differentials for May 1969 were obtained by adjusting the inter-city relationships computed in May 1965 by the movement of prices, at the item level, during the intervening four-year period as measured by the various Consumer Price Indexes applicable to each city. The differential price indexes for St. John's, Nfld. and Saint John, N.B., however, were computed on the basis of comparisons of retail prices collected in each of these cities in October 1968 and related to those prevailing in Halifax at that time, with these results subsequently adjusted to May 1969 to facilitate comparisons with other cities.

For Charlottetown and Regina (non-food items only), the index measurements were derived from consumer price data collected in these cities in May 1969 and compared with prices in Halifax and Winnipeg, respectively.

The study of Canadian inter-city retail price comparisons was published in the November 1969 issue of Prices and Price Indexes DBS (cat. no. 62-002).

Comparability Improved in Imports Statistics

The External Trade Division of DBS has recently completed a project which promises to be useful for government studies of international trade policies as well as for statistical integration within DBS.

The project consists of a direct item-by-item concordance between the Canadian tariff item (CTI) and the Brussels tariff

nomenclature (BTN), using the Import Commodity Classification and the Standard International Trade Classification. The concordance has been arranged in two forms:
(a) CTI order and BTN heading order with each tariff item.
(b) BTN heading order and CTI order within each BTN heading.

The concordance and concordance tables have been studied by various government departments involved in tariff negotiations, the Department of Finance, the Department of Industry, Trade and Commerce, the Department of National Revenue and the Tariff Board, and the tables have been supplied to the UN Statistical Office, OECD, UNCTAD and GATT. Discussions took place recently in Ottawa between the Director of DBS External Trade Division, and the Chief Statistician of the GATT Secretariat, concerning the use and limitations of the concordance. Further analysis of trade data is intended to provide "effective" tariff rates under each BTN Heading.

The significance of these measures particularly for trade policy, trade promotion and tariff research, lies in the development and alignment of the Canadian tariff with tariffs of many other countries expressed in BTN terms. These measures provide government and business with the ability to make detailed comparisons of Canadian external trade statistics with those of other countries and will also provide the more detailed commodity intelligence necessary for making important trade policy decisions.

Inquiries concerning this concordance should be addressed to G.A. Richardson, Director, External Trade Division, DBS, Ottawa, 3.

Economic Accounts Branch Undergoes Reorganization

The Economic Accounts Branch of DBS has been reorganized to give recognition to altered roles, relationships and responsibilities which have developed in the Branch in recent years. An essential need for close and continuing coordination between the staff engaged on productivity analysis and the staff estimating real output data has resulted in the former Industrial Output Section and Productivity Research and Analysis Section being combined into a new division, the National Output and Productivity Division. G.J. Garston is Director.

At the same time, it became apparent that the functions performed by the former National Accounts Section, particularly those relating to coordination and integration of data, could be carried out more effectively as a Division. The name was changed to National Income and Expenditure Division to more adequately identify its precise status within the overall Canadian System of National Accounts. G. Leclerc is Director.

The General Time Series Staff includes overall responsibility for the administration of CANSIM (Canadian Socio-economic Information Management System), as well as functioning as a DBS focal point for general time series development. Miss Mary Lennox is Chief.

The role and organization of the Balance of Payments and Financial Flows Division remains unchanged.

Railway Statistics Converted to SCC Basis

After a long period of studies and negotiations, DBS has completely revised its railway freight statistics. This new form of presentation, which begins with the January 1970 data, deals with two main areas: (a) the commodity conversion project, and (b) the railway carloadings program.

(a) Commodity conversion project – before conversion, railway commodity statistics were based on the railway's commodity codes condensed to 267 items. As such, they were not comparable with the other DBS series based on the Standard Commodity Classification (SCC). The SCC was developed by DBS to be compatible with the United Nations Standard International Trade Classification, and has proved to be particularly well suited for classifying foreign trade statistics.

The task of converting the railway's 13,000 commodities was undertaken after the new condensation of the SCC, consisting of 320 commodities, was established. Involved in this task were extensive negotiations and analysis and the writing of new computer programs – much of the work being done by the major railways.

Because of the changes, *Railway Freight Traffic* is now more comparable with other DBS publications in the commodity series. In addition, the segregation of potash, lignite coal, container traffic and other commodities which have recently become economically important, has considerably increased the usefulness of the publication.

(b) *Carloadings* has also been expanded this year to show a 70-commodity breakdown in place of the 48-commodities previously used. This expansion now permits the segregation of several commodities, including potash, sulphur, lead and zinc ores, and plywood, which have been gaining in economic importance. Cars received from connecting railways will now be listed as coming from Canadian or from United States connections. Piggyback traffic will also be segregated to show trailers separate from containers.

In addition to this extra detail, the new form will show tons loaded as well as carloads. This should provide a measure of traffic volume which will not be affected by the gradual introduction of larger equipment.

The frequency of *Carloadings* has been changed to monthly from four times a month. However, total carloads and tons, along with piggyback carloads and tons for Eastern and Western Canada, will continue to be available on a four-times-a-month basis for those desiring a quick economic indicator.

Inquiries should be directed to A. L. Brown, Director Transportation and Public Utilities Division, DBS, Ottawa, 3.

PROJECT PROGRESS REPORTS

Improvements Continue in Timeliness Program

Further progress has been made in improving timeliness of release of DBS data. At the start of 1970:

Exports by Commodities was issued an average of 45 days after the reference date – a noteworthy improvement over the 99-day average time lag of 1967. In *Imports by Commodities,* the time lag dropped sharply from 1967 to 1968 – 103 days to 57 – and has shown continued though modest improvement for 1969 at 56 days.

In *Employment and Average Weekly Wages and Salaries,* the time lag improved from 92 days in 1967 to 69 days at the end of 1969.

The *Summary of Foreign Trade* was issued seven days earlier in 1969 than in the previous year and 43 days earlier than in 1967. The present figure is 59 days from reference date to issue date.

For *The Index of Industrial Production,* important as a cyclically coincident economic indicator and a major integrating device within DBS, the time lag in 1969 was 42 days, slightly better than the target of 45 days set by the Timeliness Committee when the program began.

National Income and Expenditure Accounts, a comprehensive economic indicator, was the subject of a Timeliness Committee investigation in late 1968 and 1969. Results of the work of the Committee and the various other groups involved began to be felt in the third quarter of 1969 when the information was released 52 days after the reference date: much closer to the U.S. figure and a decided improvement from the first and second quarter figures of 84 and 92 days. The fourth quarter figure was 57 days.

Canada's Balance of International Payments is now released within 45 days of the end of the reference quarter, an improvment of 30 days, and coinciding with the U. S. early release date.

Job Vacancies: Some National Data Soon

The Job Vacancy Section of the DBS Labour Division continues to make progress toward its objective of providing data on current and future job vacancies. The Survey, undertaken on a cost-recoverable basis for the Department of Manpower and Immigration, was made necessary by the growth in selective manpower policies and their increasing demand for data on vacant jobs at any particular time. Without this information as an essential complement to readily available information on unemployment and the unemployed, the planner is at a distinct disadvantage.

The establishment of such a survey, with almost no previous experience and with limited knowledge of the job vacancy market, presents considerable problems of definition and concept. Requirements for data for policy decisions make speed essential while the need for theoretical relevance and future adaptability induce caution.

A highly generalized data system and the building-up of a large interview capacity, which assists in improving data quality and also allows for periodic collection of additional information, provide an inherent flexibility in the system enabling response to changing analytical requirements with minimal complication.

The core of the job vacancy definition is objective recruiting action by the employer, undertaken during a specified time period, to fill a position that is vacant. The minimum duration of a vacancy is one day. Additionally, vacancies covered in the survey are required to be "external" or available to the general labour market, rather than "internal" or filled only from the establishment's current list of employees. Normally, the firm's labour requirements will "feed through" the internal market before appearing as external vacancies. A job vacancy for the purposes of this survey is therefore a position externally vacant for at least one day, and for which active recruiting is being conducted.

The survey is conducted in two phases, the first by mail, the second by interview. From the DBS central file of 400,000 companies and legal entities, a master file of about 150,000 reporting agents, known as JVRU's (job vacancy reporting units), is made up. The population of the master file is stratified on the basis of size, industry and location, and a mail-phase sample of 25,000 is chosen for each survey occasion.

The results of the survey, conducted twice monthly, will allow monthly estimates of job vacancies by occupation and location, and provide three-month moving averages ending with the current month. The rotation of samples is such that a maximum of reliability is achieved over six survey cycles, or every three months.

The methodology and the findings of the survey will be subjected to intensive evaluation over the next year. Because this is an entirely new field of investigation and because of the complexity of the program, no firm data can be set for the release of data but it is hoped that some data at the national level will be available by the end of 1970.

Further information on the Job Vacancy Survey may be obtained from Job Vacancy Survey Section, Labour Division, DBS, Ottawa, 3.

Canadian Travel Survey Postponed

The inability of some of the provincial sponsors to contribute financially toward a major household survey of travel has resulted in the survey's postponement. The sponsors, the Office of Tourism, Department of Industry, Trade and Commerce, and the tourism offices of the ten provincial and two territorial governments, had agreed that the survey should begin in April 1970 and plans were well advanced.

Dr. S.A. Goldberg, New Chairman, Income Research Association Council

Dr. S.A. Goldberg, Assistant Dominion Statistician, Integration and Development, was elected Chairman of the Council of the International Association for Research in Income and Wealth at the General Conference held in Nathanya, Israel. Dr. Goldberg has been a member of the Association almost since its inception and has served on its Council.

The Association was founded in 1947. Its aims are the advancement of knowledge related to national income and wealth. Its fields of interest are the definition and measurement of national income and wealth, and development of systems of economic and social accounting and their use for economic policy, international comparisons, and other economic analyses.

This conference, held in August 1969, was the eleventh for the Association. Sessions dealt with: the role of prices in the national accounting framework; financial accounts; regional accounting; and personal income distribution.

Three papers were presented by DBS staff members. Hans J. Adler, Assistant Director General of the Economic Accounts Branch, in his paper "Approaches to Regional Economic Accounting in Canada", defined 'economic accounts' as a set of statistics useful in economic analysis, and defined 'region' as a province.

The paper was divided into four sections, the first of which contained a brief historical outline of the development of demands for provincial economic accounts and the Dominion Bureau of Statistics response to these needs.

Apart from a description of the more well-known conceptual difficulties, some of the fundamental problems of the usefulness and applicability of a national accounting framework to the regional scene were discussed. The resource problems of constructing analytically meaningful and reliable, as well as spatially reconcilable, regional accounts were described.

The second part outlined the impact of present policies and problems on the development of regional statistics. It described the reasons for the Bureau's desire to strengthen its data base in regional terms and the decision to await possible construction of regional accounts until the regional data base has been fleshed out in a more systematic manner. With the development of the latter, Mr. Adler suggested, the ability, advantages and disadvantages of the provinces undertaking their own estimates must also be more fully explored.

The third part of the paper dealt with an overview of work in Canada on provincial accounts carried out by organizations other than DBS. The last part gave a summary description of the data gaps which exist in presently available regional statistics.

A paper by Miss Jenny R. Podoluk, Co-ordinator, Consumer Finance Research Staff, Socio-Economic Statistics Branch, "Some Comparisons of the Canadian-U.S. Income Distribution," dealt with similarities and differences in the income distribution in the two countries examining cross-sectional data for the period 1951 to 1965. Most of the previous research done in the area of relative income levels and levels of living, Miss Podoluk noted, had been on per capita comparisons and the results were somewhat contradictory. Her study dealt mainly with the post-war period; sufficient data are not available for earlier years.

The conclusions reached were that current income distributions are very much alike on both sides of the border, that almost the same degree of inequality exists, and that almost the same family and individual characteristics for low and high income groups are present. In both countries, in the period since 1951, real incomes have moved upward in much the same degree.

A disaggregation of the data to compare more homogenous families and individuals suggests that there are internal differences in the two countries. For example, the smaller proportion of highly educated workers in the Canadian labour force, as compared with the United States labour force, appears to result in greater differentials of earnings between those with low levels of education and the more highly skilled workers. In fact, workers in some of the highly skilled occupations are moving toward parity in earnings with their U.S. counterparts. On the other hand, greater inequality of family income by age of family head exists in the United States than in Canada. U.S. data suggest that inequality has been widening there; in Canada it has been diminishing. Different employment preferences of married women may be a factor in this.

Statistics are not yet available for the assessment of the impact of recent changes in Canadian social security legislation on income distribution. It is possible that when the full effects of these changes are felt, the Canadian income structure may show greater divergences from the U.S. structure than at present.

In their paper "Pricing and Price Indexes in the Service Industries," Miss Betty J. Emery, Chief, Industrial Prices Section, Prices Division, Economic Statistics Branch, and John Randall, Director, Balance of Payments and Financial Flows Division, Economic Accounts Branch, dealt with that aspect of the marketing of services which is concerned with the measurement of output prices.

The paper examined the relative importance of service industries in the Canadian economy and outlined the needs and uses for price indexes in this area. It also suggested the basis for a system of priorities which could be used to select the particular industries for which price indexes could be developed. Trade, transportation and personal and business services, were suggested as the industries offering the greatest potential for short-run achievement.

On the practical aspects of pricing, the paper suggested what might be priced in the priority industries or the coverage envisaged; where pricing might be undertaken or the source of data; and when pricing should be undertaken or the frequency of index calculation.

The value series in current prices, which form the basis for constructing integrated sets of macro-economic systems of statistics, was built up at a considerable cost. The integrated systems now require a substantial matching of commodity and industry-oriented price indexes; the reallocation of resources to price

collection and index preparation; and a large injection of new price data.

Inquiries should be directed to Dr. S.A. Goldberg, Assistant Dominion Statistician, Integration and Development, DBS, Ottawa, 3

International Statistical Institute Thirty-Seventh Session

Delegates from 48 countries and five international organizations gathered in London, in September 1969 for the 37th Session of the International Statistical Institute. More than 750 members, mostly from government statistical agencies, participated in nine days of formal sessions, receptions and informal gatherings.

This session, the first held in London in 35 years, was at the invitation of the Royal Statistical Society. It was officially opened by then British Prime Minister, the Rt. Hon. Harold Wilson, at a reception given by the British Government. Later in the Conference, Mr. Wilson was the principal speaker at the official banquet and dealt with the British Government's program on statistics and development of a more centralized statistical system.

The conference dealt with a wide variety of topics, including problems of capital planning, econometrics, statistics in the physical sciences and manpower projections. Computers and data banks were dealt with in some depth. A paper by Dr. I.P. Fellegi, Director of Sampling and Survey Research Staff, DBS, and Dr. S.A. Golberg, Assistant Dominion Statistician, Integration and Development, "Some Aspects of the Impact of the Computer on Official Statistics," made the point that the eventual use of the computer is an important factor to be taken into account during the design of surveys. The development and implementation of the required comprehensive design requires the participation of several disciplines, collaborating as a team under a project manager. Moreover, where possible, individual automated surveys should be designed to be compatible with other similar surveys, to spread overhead costs over a number of projects and enhance opportunities for integration.

The authors suggested that manual interruption of computer processing of survey data be kept to a minimum so that the advantages of computer operations are not lost. They stressed, however, that well-designed automated surveys are distinguished by the amount of care taken to provide an "audit trail" (i.e. summary measures of the impact of computer processing on the collected data) and that it is through these trails that the statistician exercises control over the processing of data by overruling the computer processing where this appears to improve significantly the quality of the final estimates.

The paper also described some lessons learned in automation of some DBS surveys. The Job Vacancy Survey was cited as an example of a complex project which was successfully automated. Part of the reason for its success was that it was designed for automation from the outset, applying lessons learned from other surveys.

The authors stressed that investment in data storage and retrieval systems yielding prompt and flexible statistical services will pay off handsomely. Two major developments in DBS were described: the Canadian Socio-Economic Information Management System (CANSIM) and the Geographically Referenced Data Storage and Retrieval System (GRDSR).

Automation has already had a considerable impact on the management of the statistical office, it was noted. Comprehensive planning systems, management information systems, and production planning and control systems, have had or will have to be developed. The updating of hardware and the training and retraining of staff were of increasing importance, if bottlenecks or serious setbacks are to be avoided.

The paper also outlined the type of organizational structure best suited to take advantage of the new technology. It was suggested that one benefit of automation was that subject-matter officers who currently have a substantial administrative responsibility would have more time to devote to research, to the needs of users and to liaison with respondents. Closer ties with government departments generating administrative records was becoming increasingly necessary to ensure that full allowance is made for statistical purposes as the departments automate their internal information systems or make changes in them.

Another feature resulting from the new technology was the need for flexibility in moving people from one major development to another. A prerequisite for this is the instillation of a department-wide orientation in people. As far as organization is concerned, a functional type structure may well develop, grouping people primarily by the type of activity they are engaged in: data processing, production planning and control, central registers, classifications survey methodology, field operations, research and analysis.

Manpower Projection

Three invited papers and two contributed papers were presented in the meeting on manpower projection organized by H.P. Lacroix of the International Labour Organization.

Dr. D.F. Johnston of the U.S. Department of Labour, in his paper "The Integration of Supply and Demand Projections in the Labor Force", described the many difficulties in the way of establishing a satisfactory integration of the supply and demand approaches, especially when occupations, skills or educational levels are being studied – as they are likely to be if the projections are to have practical value. Despite the difficulties, Dr. Johnston was optimistic about the outcome.

A paper by C. Vimont, of the Institut National d'études démographiques of France, *"La prévision de la demande de main-d'oeuvre,"* reviewed a number of possible ways of presenting labour force demand. He described, as the most commonly used method, one which related the level of employment in each sector of the economy to projected production levels and productivity indices, and which usually breaks down the figures within each sector by occupation or other classifications of labour.

J.N. Ypsilantis, also of ILO, in his paper, "Projection of Manpower Supply", described the basic method for labour force projection used by ILO, and ways in which experience in one

geographical area may be used to improve the projections for other areas.

"The Canadian Job Vacancy Survey: A Measure of Labour Demand" by Dr. Sylvia Ostry, formerly Director of Special Manpower Studies, Integration and Development, and now a member of the Economic Council of Canada, and Alan Sunter, Co-ordinator, Economic and Financial Survey Methods dealt with the program of development of the Canadian Job Vacancy Survey. (See also, Project Progress Reports).

The paper defined a vacant job as one which has not been occupied during some specified reference period and for which recruiting is being actively carried on. The core of the job vacancy definition is current recruiting activity. The activity criterion is applied stringently and literally. Some features of the program which are required by this criterion are: the information must be secured from a respondent who is as close as possible to the centre of recruiting activity (Job Vacancy Reporting Units have been formed in large businesses in these key areas), the survey period is set at one day; the recruiting activity must not be restricted to people within the respondent company; and the survey distinguishes between current vacancies and future-starting-date vacancies.

The authors concluded that:

1. An operationally feasible definition of current and future-starting-date vacancies has been developed and successfully tested.
2. Response units, capable of reporting job vacancy data with minimal error, have been defined and incorporated as sample units of an ongoing survey operation.
3. A large-scale and flexible survey capacity has been established in the enterprise sector.

The International Statistical Institute is an autonomous society devoted to the development and improvement of statistical methods and their application throughout the world. The next ISI conference will be held in Washington, D.C. in August 1971.

Inquiries should be directed to Dr. S.A. Goldberg, Assistant Dominion Statistician, Integration and Development, DBS, Ottawa, 3

Four DBS Papers Presented at CEA Meeting

The fourth annual meeting of the Canadian Economics Association was held at the University of Manitoba, Winnipeg, Manitoba, in June. Among the papers presented were four from DBS staff:

- "Some Recent Developments and Plans in the Field of Merchandising and Service Statistics", by G. Snyder, Director, Merchandising and Service Division, Economic Statistics Branch.
- "Meeting Research Needs from 1971 Census Data", by Dr. L.O. Stone, Acting Assistant Director, Census Division and H.G. Beyer, Co-ordinator, Research Sub-division, Census Division, Socio-Economic Statistics Branch.
- "DBS Approach to Regional Statistical Needs", by M.L. Szabo, Co-ordinator, Regional and Manpower Research Staff, Integration and Development.
- "Developments in Educational Statistics for Economic Planning," by Dr. Miles Wisenthal, Director, Education Division, Socio-Economic Statistics Branch.

A report on the conference and abstracts of these papers will be given in the next issue of the *Statistical Observer.*

Federal-Provincial Conference on Agriculture Statistics

"One of the real reasons for having this meeting is to see whether we can build up better communication among the user groups, DBS and provincial organizations". This was the way W.L. Porteous, Director of the Agriculture Division, DBS, summed up a roundtable discussion in the Federal-Provincial Agricultural Statistics Conference held in Ottawa in March 1970.

The discussion followed the presentation of papers by C. Webber, Division Agronomist, Imperial Oil Ltd., and by L.E. Leighton, Assistant General Manager, Packinghouse Division, Canada Packers Ltd., on the management information needs of agribusiness.

With Mr. Porteous on the panel were Mr. Webber, Mr. Leighton, and Dr. D.H. Plaunt, Director, Farm Management Division, Economics Branch, Department of Agriculture. The panel members representing their industries answered numerous questions on what specific reports and what parts of the reports they found most useful. They, in turn asked questions about DBS surveys and services.

Other topics touched on in the discussion were:

- private surveys by industry and the possibility of joint government industry projects,
- the possibility of issuing information on prices of livestock shipped to stockyards and to packinghouses,
- the reluctance of some farmers to provide information which they considered might benefit packinghouse operators but harm themselves,
- the farmer's need for expert analysis of the statistics,
- confidentiality, the farmer and the Income Tax Act, and
- the relevance of DBS information.

Two papers were presented which dealt with farm labour costs. One, "Farm Wage Survey", by R.B. Proud, Farm Finance Section, DBS, dealt with this survey as it has been conducted since its inauguration in 1940. The other, by Miss A. W. Foster, Prices Division, DBS, "Proposals for Improving the Accuracy and Reliability of Hired Farm Labour Data in their Use in the Price Index of Commodities and Services used by Farmers," was the result of a cooperative effort in which the DBS Prices Division and the Farm Finance Section joined forces to make an extensive appraisal of the Farm Wage Survey. Three major changes were suggested: in sample selection, in specifications of hired farm labour required and design of the questionnaire, and the frequency and timing of data collection.

The proposal that a central register of farms be set up was put forward by R. Gagné, Director of the Quebec Bureau of Statistics. In Mr. Gagné's view such a register could be used:

- to establish comprehensive tabulations according to specific characteristics for specific surveys,

- to serve as a depository for statistical compilations of administrative data, e.g. computerized farm accounting, and
- to serve as a basis for establishing samples.

As a basis for the central register of farms, Mr. Gagné suggested the five-year census as the most readily available source of information, and requested further studies into the technical and administrative aspects of such a project.

Five recommendations were made at the conference:

1. An interdepartmental committee consisting of the Canada Department of Agriculture, DBS, and a representative of the Meat Packers Council, be formed to review and assess the marketing information currently published in the Weekly Livestock Market Review
2. Consideration should be given to the summarizing and highlighting of statistical information prepared by DBS and its dissemination to farmers in a manner to be decided upon in consultation with the Canada Department of Agriculture.
3. A committee consisting of representatives from DBS, Canada Department of Agriculture and the Meat Packers Council be established to determine the future of cattle-on-feed statistics. It was further suggested that a precise definition of the proposed quarterly survey of livestock numbers be prepared and circulated to the provinces.
4. There should be consultation between the Department of Manpower and Immigration and the following DBS Divisions and Staffs: Prices, Labour, Agriculture, and Sampling and Survey Research, to consider ways and means of improving survey methods and concepts used in the development of the farm wage rate series.
5. DBS should undertake to collect information regarding farm rental rates. Also, consideration should be given to allocating the value of vegetables raised in greenhouses to the total cash receipts from the sale of vegetables rather than "other crops" as is done at present.

Standardized Classifications in Municipal Finance Statistics

A new system of classification for all financial transactions of municipal administrations was introduced to British Columbia municipal finance officers at a one-day conference held in Victoria, B.C., in February 1970. The conference was arranged by the British Columbia Department of Municipal Affairs in conjunction with DBS Governments Division and included 150 delegates and observers representing most of the municipal administrations in British Columbia, as well as the British Columbia Advisory Committee of the Institute of Chartered Accountants, and representatives from the Investment Dealers Association.

The new system was developed through six sessions of the Eighth Federal-Provincial Conference on Municipal Finance Statistics and approved at the Halifax session of the conference in November 1969. DBS was asked by the conference organizers to explain the new system as detailed in a manual: *A Financial System for Canadian Local Governments.*

This manual sets out the kinds of information required, using standardized classifications, rather than specifying forms to be used in reporting. The adoption of this system is part of an ongoing program in the DBS Governments Division to establish a comprehensive base for the study of government finances at all levels.

G. A. Wagdin, Director General, Financial Statistics Branch, DBS, told the conference that municipal revenues in 1969 were estimated at $3.9 billion, or roughly 15 per cent of total revenues raised by all three levels of government, and that municipal expenditures were estimated at $4.5 billion or 17 per cent of the total for the three levels in the same year. These figures, said Mr. Wagdin, underline the powerful influence municipal governments exert in their own communities, the economic regions in which they are located and in the nation as a whole.

J. B. Smith outlined the work of DBS Governments Division, of which he is Director, in a paper "The What, Why and How of the Governments Division of the Dominion Bureau of Statistics". He defined the role of the Division as "the development and issue in accordance with user requirements of complete and integrated statistics on all levels of government in Canada and on their agencies". "We collect statistics", he continued, "as a comprehensive basis for the study of government and for the study of the financial, economic and social involvement of government in and its impact upon national, provincial, local and regional activities".

The "how" of the Governments Division's operation is structured on four principal categories: economic analysis compilations, financial management series, government enterprise series, and the employment and payroll series. These provide, independently or in combination, basic standardized information on: government revenues; the services provided by governments and the costs of such services; the objects of government expenditures in the provision of services; the government operations within, and effect upon, the capital market; government-type business enterprises; and government as an employer.

The new classifications manual and its place in helping to meet the needs of users, was explained by A. G. Kerr of the Division's Local Government Section. The new manual will be in loose-leaf form to facilitate updating. It will be issued in a number of volumes, two of which, the General Introduction and the Classification Systems, are scheduled for release in the fall.

Five classification systems will be included:

1. Revenue Classification System
2. Functional Classification System of Expenditure
3. Object Classification System of Expenditure
4. Assets Classification System
5. Liabilities and Equity Classification System

Succeeding volumes will cover such topics as: financial reporting, the application of the classification systems to "single-function" governments (municipal agencies, joint boards, commissions, school boards), terminology, and the incorporation of non-financial information for the development of performance indicators by which true comparisons can be made between the various operations of governments, and by which the efficiency and effectiveness of governments can be determined.

The adoption of the classification system was the main accomplishment of the Halifax session of the Federal-Provincial

Conference on Municipal Finance Statistics in November 1969. This project began in 1967 at the first session, and continued through the next five sessions with DBS drafting the proposals and carrying out any necessary amendments,requested by the delegates.

In order to speed up production of the manual, a timetable was established for forwarding to provincial officials the manuscripts of the various sections, and for their return to DBS.

Inquiries should be directed to A. G. Kerr, Chief, Local Governments Section, Governments Division, Financial Statistics Branch, DBS, Ottawa, 3

Inter-American Conference on Transportation Statistics

The first session of the Sub-committee on Transportation and Communications Statistics of the Inter-American Statistical Institute (IASA) was held February 1970 at the headquarters of the Pan American Union in Washington, D.C.

The sub-committee, chaired by A.L. Brown, Director, Transportation and Public Utilities Division, DBS, consisted of experts in road transport from Brazil, Chile, Honduras and the United States. Also in attendance were a number of observers from such organizations as the International Road Federation, the United States Bureau of Public Roads, the Latin American Free Trade Association, the Economic Commission for Latin America, and the Organization of American States.

Because of the size and complexity of the field, the sub-committee in its first session confined its deliberations to road transport. Future sessions are to be convened to deal with other modes of transport and communications. The following topics were included in the agenda:

1. Consideration of the status of road transportation statistics in the Americas, particularly with respect to activities carried out during the 1956-69 period at the world and regional levels, and those planned for the immediate future; and the results of the inquiry on road transportation statistics conducted by the IASI general secretariat.

2. Study of the draft standards and methodology (concepts definitions, classifications and tabulations) pertaining to Section XI.D. Road Transport, of the Inter-American Program of Basic Statistics and formulation of recommendations on the draft for consideration by the Committee on Improvement of National Statistics (COINS).

3. Other matters (including future activities of the sub-committee).

The sub-committee reviewed and revised a proposed standard for producing basic road transport statistics which is to be submitted to the IASI Committee for the Improvement of National Statistics for consideration, and to member nations for comment.

Inquiries should be directed to A.L. Brown, Director, Transportation & Public Utilities Division, DBS, Ottawa, 3

CALURA Extends Measures of Business Magnitude

The Corporations and Labour Unions Returns Act Division (CALURA) has recently released seven publications which provide more complete measures of the magnitude of business in Canada, and permit a better assessment of the importance of foreign-owned corporations.

The 1965 Report on Corporations was the first to reflect the results of amendments to the Corporations and Labour Unions Returns Act which were passed in 1965. The original legislation involved duplication of corporation financial data accumulated under the Income Tax Act. To avoid this duplication, legislation was passed which enabled a joint statistical operation to be undertaken by DBS and the Department of National Revenue. This resulted in the elimination of the requirement to file one of the two sets of financial statements previously required.

The amendments have broadened the scope of corporation statistics in two important ways. The access to financial statements of all taxable corporations has permitted a compilation of statistics for corporations exempt from reporting under the Corporations and Labour Unions Returns Act, but subject to the provisions of the Income Tax Act. The additional information has provided more complete measures of the magnitude of business in Canada and has permitted a better assessment of the importance of foreign-owned corporations.

The second important aspect of the 1965 amendment is that the additional information available from the corporation income tax statements has permitted the identification of corporations having difficulty in meeting the reporting requirements of the Corporations and Labour Unions Returns Act. On the basis of this evidence, and after an extended program was undertaken to acquaint corporations with their reporting responsibilities, the number of CALURA returns increased from 26,764 in 1964 to 37,780 in 1965.

The 1966 and 1967 corporation reports were prepared on a basis consistent with that of 1965.

For further information on the seven publications, listed below, contact C.R. Luft, Planning and Analysis Section, CALURA, DBS, Ottawa.

Corporation Financial Statistics – 1967, cat. no. 61-207
Corporation Taxation Statistics – 1967, cat. no. 61-208
Report for 1965 – Part I, Corporations;Corporations and Labour Unions Returns Act,
Report for 1966 – Part I, Corporations; Corporations and Labour Unions Returns Act,
Report for 1967 – Part I, Corporations; Corporations and Labour Unions Returns Act,
Report for 1967 – Part II, Labour Unions ; Corporations and Labour Unions Returns Act,
Inter-corporate Ownership – 1967, cat. no. 61-508

New Paper on Industry Selling Price Indexes

A new reference paper, *Industry Selling Price Indexes 1956-1968* cat. no. 62-528, was released by DBS in January 1970. The

publication introduces the first comprehensive revision to the system of price indexes relating to manufacturing industries which was initially released in 1961 on the time base 1956 = 100. Price indexes for 99 industries are included in the publication in addition to some 470 relevant commodities.

The revised index series (1961 = 100) contained in this report, supersedes all previously published indexes. Although every effort was made to maintain historical continuity with their 1956 based counterparts, some discontinuities were created due to the changed structure of the Standard Industrial Classification on which the indexes are based. Index data for the period prior to 1961 have been arithmetically converted to the base 1961 = 100. Those series for the year 1961 and subsequent years have been reworked to reflect the relative importance of commodities sold by Canadian manufacturers, and to facilitate the introduction of new price series.

The more important features of the revision are (i) the introduction of the 1961 time and weight base period, (ii) the adoption of the 1960 Standard Industrial Classification and corresponding definition and classification of establishments, and (iii) the expansion in the number of commodity indexes available to users.

Commencing with the December 1969 issue of *Prices and Price Indexes* (cat. no. 62-002), the index series as published in the reference paper are being up-dated monthly.

Inquiries should be directed to R.L. Borden, Assistant Director (Industrial Prices), Prices Division, DBS, Ottawa, 3

Market Research Handbook Now Available

A completely new concept in the DBS market research handbook series, developed for the 1969 *Market Research Handbook,* (cat. no. 63-514) brings together for the first time in one volume, a comprehensive range of marketing data gathered in various DBS surveys, in addition to summaries of 1966 census data.

The new handbook provides a convenient source of information and reference for all those who are engaged in analyzing the many aspects of Canadian markets at the local, provincial, regional and national levels.

The present *Market Research Handbook* has been radically changed from earlier editions: data are provided in greater depth than before, explanations accompany most tables and definitions are provided for many terms. The layout and typography have been changed both to enhance the appearance of the handbook and to make it easier to use.

The Merchandising and Services Division, which is responsible for the handbook, consulted with a number of leading market research consultants and others in the private sector on improvements.

One principle which emerged from this exchange of views was that the handbook should show, in addition to summary data from the latest census, marketing information from other DBS surveys: thus survey data for 1967 and 1968 are included.

Another improvement on previous editions is that the new handbook indicates trends by showing data for earlier years as well as the latest available information. This type of presentation is intended to help the marketing practitioner in assessing the dynamic aspects of marketing topics, such as the growing consumer acceptance of automatic dishwashers or the fluctuations of residential construction.

The publication is divided into seven sections under these headings:

Selected Economic Indicators
Merchandising
Advertising and Media
Population Characteristics
Personal Income and Expenditure
Housing, Motor Vehicle, and Household Facilities and Equipment
Small Area Market Data

The Small Area Market Data section gives a wide range of information – on population, housing, passenger cars, income, manufacturing, agriculture, and service and retail trade – for each province, for county or census division, and for incorporated places of 15,000 population and over.

Containing some 640 pages, the new DBS *Market Research Handbook* is more than four times larger than previous DBS marketing handbooks. It presents data in bilingual form in more than 250 tables, 14 maps and 18 charts; large type and a two-colour format facilitate the location of the desired information.

Inquiries should be directed to Dr. L.D. Sonkodi, Merchandising and Services Division, DBS, Ottawa 3.

Major Historical Revision of National Accounts

A major historical revision of the national accounts, *National Income and Expenditure Accounts 1926-1968* (cat. no. 13-531), made possible by new information and refinements in statistical concepts is scheduled for publication later this year.

A preliminary bulletin shows that as a result of the latest revision, Canada's economic expansion for the period 1950 to to 1968 is now estimated to have been at a higher annual real rate than previous estimates showed: 5.1 per cent as against 4.5 per cent.

Significant changes have also occurred in the relative proportions of various components of GNP.

The increase in GNP reflected varying movements among its components. For example, corporation profits increased at an estimated current dollar annual rate of 6.2 per cent (up from 4.8 per cent in the previous estimates). Wages and salaries also rose faster (8.7 per cent as against 8.1 per cent).

On the other hand, the effect on the rate of growth of business capital formation was negligible (7.8 per cent vs. 7.7 per cent).

While statistical revisions in the new accounts have been largely confined to the period since 1951 when previous benchmarks were established, a number of series has also been revised back to 1926 in light of new information and newly developed statistical methods.

Significant features of the new estimates, which supersede the

previous historical series covering the period 1926 to 1956, include major statistical revisions based on results of the 1961 censuses of population, housing, labour force and merchandising. New data from Department of National Revenue taxation returns and additional comprehensive financial tabulations by the Corporation and Labour Unions Returns Act Administration provided other significant input.

In addition to major statistical revisions, significant changes in definitions and structural presentation are employed in the new accounts while a variety of new concepts and improvements in the methodology, range and quality of statistics originating in the Bureau and other agencies, have permitted improved estimates of many items.

Examples of changes in definition are:

- Government investment is now included in total gross fixed capital formation.
- Hospital expenditures, previously included in consumer expenditures, as of 1961 became an item in government expenditures, to reflect the role of government hospital insurance spending. Hospital capital spending, previously an item in business gross fixed investment, similarly became an item in government capital expenditures.
- Price deflators for construction expenditures now incorporate allowances for changes in productivity and profit margins to improve constant dollar estimates.

The revisions are also designed to provide a closer relationship to the international standards represented by the new United Nations System of National Accounts.

Inquiries should be directed to G. Leclerc, Director, National Income and Expenditure Division, DBS, Ottawa, 3

Preliminary Report on Income Distributions

New estimates of family and individual income levels in Canada for 1967 have been released by the DBS Consumer Finance Research Staff in a bulletin *Income, Distribution and Poverty in Canada, 1967, Preliminary Estimates.* The estimates were derived from a survey conducted in 1968 on family incomes in 1967, the tenth in a series of consumer finance surveys undertaken by the Bureau.

The 1967 preliminary estimates showed that the annual family income in Canada was $7,596, an increase of 16 per cent over the 1965 estimate of $6,536. About half the increase is counted as real gain; consumer price increases absorbed the remainder.

In individual incomes, women were still far behind men in 1967: an average income of $2,303 as against $5,331 for men. Women however, gained more percentage-wise: their incomes rose 23 per cent over 1965 levels as against 17 per cent for men.

The 1967 estimates also show that the proportion of families receiving incomes of less than $5,000 decreased to 29.7 per cent (from 37.9 per cent in 1965), while the proportion receiving $10,000 and up increased to 22.5 per cent from 14.6 per cent. This brought the total in the $10,000-and-over bracket to more than one million families. (For purposes of the survey, a family is defined as a group living together and related by blood, marriage or adoption).

By regions, the survey showed that Ontario had the highest average family income in 1967 – $8,466 – while the Atlantic region had the lowest, $5,756. The average rate of increase was highest in Quebec and Ontario (nearly 18 per cent), lowest in the Atlantic region (11 per cent), while the Prairies and British Columbia at 14 per cent were slightly below the national average.

A significant feature of the 1967 survey results was a downward shift in the estimated proportion of families below the income levels which were used by the Economic Council of Canada as indicators of poverty. In 1967, the proportion was 18.6 per cent as against 21.2 per cent in 1965. In round figures, the number of families in this category is estimated to have declined to 840,000 in 1967 from more than one million in 1961, despite a substantial increase in total population.

The new poverty estimates are arrived at by applying the low income cut-offs previously used by the Economic Council of Canada in its fifth annual review (1968) now adjusted for consumer price increases. The new poverty lines for 1967 (with 1961 cut-offs in brackets) are: single persons, $1,740 ($1,500); family of two, $2,900 ($2,500); three, $3,480 ($3,000); four $4,060 ($3,500); five or more, $4,640 ($4,000).

The proportion of families below these cut-offs, by regions, showed the Atlantic region as having the highest ratio, nearly 34 per cent, and Ontario the lowest, 12 per cent.

The main report *Income Distributions by Size in Canada* (cat. no. 13-534) scheduled for issue in the second half of this year, will provide the most comprehensive income distribution data available for the intercensal period. Because the sample size was larger – approximately 21,000 family units, or 37,500 individuals with incomes for the 1967 survey, versus 8,800 family units and 15,000 individuals with incomes for the 1965 survey – it will be possible to provide more detailed cross-classifications and income distributions for most provinces rather than by the five economic regions. In addition, the report will be followed by articles or bulletins dealing in depth with studies of certain population groups.

Inquiries should be directed to Mrs. G. Oja, Chief, Research and Analysis, Consumer Finance Research Staff, DBS, Ottawa 3.

Fifteen-Year Summary of Income Distributions

Income Distributions, Incomes of Non-farm Families and Individuals in Canada, Selected Years 1951-1965 is a historical summary of six small-scale surveys taken for the years 1951, 1954, 1957, 1959, 1961 and 1965. In addition to summarizing the data of the previous reports, it gives two different kinds of information for the first time – income distribution in constant (1961) dollars for the survey periods, and data in quintiles.

Section I tables, given in current dollars, show the distribution of non-farm individuals and of families, in various income groups by source of income i.e. whether it was derived from wages, investment, self-employment or other sources. The distribution

is also shown by selected characteristics: by region and place of residence of the recipient, by sex, age group, relationship to the head of the family, immigration status and educational level.

This same type of information is given in Section II but in constant (1961) dollars. Using the tables in this section, comparisons can be made of the changes in real income which took place during the 15-year period.

An entirely different way of presenting the data is used in Section III – the percentage income distribution for individuals and families is given in quintiles. These are arrived at by listing all income recipients or families in descending order and dividing this list into five equal-sized parts; a quintile therefore represents one fifth or 20 per cent of the total list. From these tables, studies can be made of any particular quintile by the same selected characteristics as were used in the other two sections, and for the same time periods.

This report is an important contribution to the study of incomes and especially the changes in incomes which have occurred since 1951.

Income Distributions, Incomes of Non-farm Families and Individuals in Canada, Selected Years 1951-1965 (cat. nos. 13-529 and 13-529F) is available for $1.00 from the Publications Distributions Unit, DBS, Ottawa. Inquiries should be directed to Mrs. G. Oja, Chief, Research and Analysis, Consumer Finance Research Staff, DBS Ottawa 3.

Monthly Breweries Survey

Two monthly surveys covering the 48 breweries which reported to the 1967 annual DBS survey of breweries are the basis of a new monthly report.

This replaces data previously provided by the Customs and Excise Division of the Department of National Revenue.

The report includes data on shipments by product and region of origin, monthly inventories and usage of major brewing components.

Breweries, cat. no. 32-119, is available from the Publications Distribution Unit, DBS, Ottawa, 3 (10¢ per issue, $1.00 per annum)

New Special Studies of Labour Force

A new study in the series of Special Labour Force Studies has been published since the last issue of *Statistical Observer.* This study, *Some Methods of Analyzing Cross-Classified Census Data – The Case of Labour Force Participation Rates,* by N.H.W. Davis, (cat. no. 71-515), examines a number of different statistical techniques and compares the results of applying these techniques to data from the 1961 Census of Canada.

Another study, *Underutilization of Manpower in Canada,* by N.K. Tandan, which is No. 8 in the general series, is an attempt to estimate the gap between potential and actual employment in Canada. The two components of the gap, unemployment and non-participation, are studied separately by age and sex in the five geographic regions.

Other studies in preparation include an examination of the cyclical variation in Canadian labour force participation rates; the nature and extent of job mobility, including an occupational and industrial dimension; and an examination of data on overtime working and multiple job holding in Canada.

Inquiries should be directed to N.H.W. Davis, Regional Manpower Research Staff, DBS, Ottawa, 3

Economic Growth Patterns in Small Areas

A new publication produced by the Regional and Manpower Research Staff of DBS, *Growth Patterns in Manufacturing Employment by County and Census Division, 1949-1959 and 1961-1965,* provides an indicator of economic growth for small areas. Changes in employment in manufacturing during the periods 1949-59 and 1961-65 are analyzed by resolving the total change into three components; national growth, industrial mix and regional share. The regional share component makes possible a spatial comparison of the ability of regions to attract their "share" of employment. The industrial mix component shows whether a region is dominated by fast-growing or slow-growing manufacturing industries.

Data are given at both the provincial and the county level, and measures for groups of counties, such as economic regions, can be easily obtained by addition of the data.

Inquiries should be directed to Dr. M.L. Szabo, Coordinator, Regional and Manpower Research Staff, DBS, Ottawa, 3

Canada Year Book and Canada 1970

The 1969 edition of the *Canada Year Book* and the handbook *Canada 1970,* the two official reference compendiums on resources, history, and social and economic conditions in Canada, have now been released.

The *Canada Year Book* is a review of the statistical data made available by DBS on almost every measurable phase of Canada's social and economic development.

The 1969 edition has 1,329 pages and is illustrated by 27 specially prepared maps and charts, and 57 photographs. In addition to normal updating of all subject matter, feature articles or specially prepared chapters have been included on: recent trends in urbanization and metropolitan growth, a summary of the agricultural statistics of the 1966 census, fuels in Canada, the first decade of the St. Lawrence Seaway, and Canada's trade with the European Economic Community.

The handbook, *Canada 1970,* covers much the same fields as the Year Book but in less statistical detail. It is designed primarily for the general public and for students, especially those of high school age. It features brief descriptions of the main aspects of the Canadian land, its people and its economy by some 60 specialists in various fields, within DBS, in other government departments and in the private sector. It gives a brief description of

salient features of national production, resources, geography and history, government organization and services.

Inquiries should be directed to P. Joncas, Director, Canada Year Book Division, DBS, Ottawa, 3.

Theory and Practice of Business Pricing

Theory and practice of business pricing are discussed in a recent book by Dr. Laszlo Sonkodi, Chief, Wholesale Trade Section, Merchandising and Services Division, DBS. The book, *Business and Prices,* is a new addition to the British Library of Business Studies series.

The book surveys the field of price making, covering such areas as: price leadership and administered prices, pricing objectives and actual pricing methods of business firms compared with economic theory, consumer attitudes and prices, pricing policies by manufacturers and retailers, the nature and economic effects of price agreements, resale price maintenance, recommended resale prices, the various types of discount and rebate schemes – including aggregated rebate schemes as a form of restrictive practice – geographical price policies (ex-works vs. delivered pricing, national vs. regional pricing), the machinery and operation of organized commodity exchanges, the special pricing problems of public utility enterprises, and the main issues inherent in government-inspired prices and income policies (wage-price guidelines).

The subjects are analyzed from three standpoints: the business firm as a decision-making unit; the issues of public policy relative to prices; and the position of the consumer.

Business and Prices, Sept. 1969, 236pp, distributed in Canada by General Publishing Co., 30 Lesmill Road, Don Mills, Ont.

Inquiries should be directed to Dr. L. Sonkodi, Chief, Wholesale Trade Section, Merchandising and Services Division, DBS, Ottawa, 3

Ontario Labour Force Trends Examined

The Economic Planning Branch of the Ontario Department of Treasury and Economics recently released two publications on the labour force of that province.

Trends in Job Families and Educational Achievement of the Ontario Labour Force examines the nature of changes in job families and provides an indication of current and future educational achievement levels for the Ontario labour force. Data on the Canadian labour force have been provided to give a broader frame of reference.

Ontario Labour Force Projections, 1968-1991 contains labour force projections for two time horizons – the short term to 1971 and the longer term to 1991. The short-term projections, based recent immigration levels and birth and death rates, are provided for each year from 1968 to 1971.

These two publications may be obtained free from the Economic Planning Branch, Policy Planning Division, Department of Treasury and Economics, Parliament Buildings, Toronto.

The Dominion Statistician, Walter E. Duffett, has announced changes in responsibilities for three Division Directors. The staff movements are in the interest of career development and to contribute to the objective of a highly co-ordinated statistical structure at DBS.

Alexander S. Foti, Director, the National Income and Expenditur Division, takes over from Donald Traquair as Director, Corporations and Labour Unions Returns Act Administration (CALURA)

Donald Traquair leaves CALURA to return to the Business Finance Division as Director. He previously worked in the Division as Chief of the Capital Expenditure Section. Mr. Traquair had been with CALURA since 1963.

Guy Leclerc, after four years as Director of Business Finance Division, has been appointed Director of the National Income and Expenditure Division of the Economic Accounts Branch. He joined the Bureau in 1957.

A recent reorganization of the Economic Accounts Branch, DBS, resulted in these appointments:

Hans J. Adler has been appointed Assistant Director General of the Branch. Mr. Adler was, from 1967, Director of the former National Accounts, Production and Productivity Division, and prior to that Assistant Director of National Accounts and Balance of Payments Division. He joined the Bureau in 1949.

Gordon J. Garston has been appointed Director of the newly – organized National Output and Productivity Division. Mr. Garston moves up from the post of Chief of Industrial Output Section, which was merged with Productivity Research and Analysis Section to form the new Division.

Béla Prigly has been named Acting Chief of the Productivity Research and Analysis Section. Mr. Prigly was formerly Assistant Chief and Head of the Aggregate Productivity Measures Unit of that Division.

Miss Mary Lennox has been appointed Chief of the recently reconstituted General Time Series Staff.

C.D.P. Bernier has been appointed Chief of the Provincial Government Section of the Governments Division. Mr. Bernier comes to DBS from the Department of Finance where he served in the Fiscal Policy and the Tax Policy divisions.

R.L. Borden has been named Assistant Director, Prices Division with responsibility for industrial prices. Prior to this appointment he served as Chief, Energy and Mineral Statistics Section, Manufacturing and Primary Industries Division of the Economic Statistics Branch. He joined the Bureau in 1960.

R.A. (Bob) Chadwick has been appointed to the new position of Assistant Coordinator (Travel) with the Provincial Liaison and Consultative Services Staff. Mr. Chadwick will be responsible for the coordination and development of an integrated system of statistics on travel, tourism and recreation. Prior to joining the Bureau he was on the staff of the Treasury Board.

Dennis C. Featherstone, Chief, Methods and Systems Section of Econometric Research Staff has left DBS to become Assistant Economist with IBM Canada, Don Mills, Ontario.

Donald C. Hanright has been appointed Director of the Information Division, DBS. A member of the professional staff of the Economic Council of Canada since 1965, he has also been a publicity adviser to the Royal Commission on Taxation, and an editorial consultant to the Royal Commission on Farm Machinery. He was previously a staff writer for the Canadian Press in Edmonton and Regina and from 1959 to 1964 in the Parliamentary Press Gallery in Ottawa, latterly specializing in financial and economic affairs.

Kenneth F. White, Director of the Information Division, DBS since November 1968, has been appointed Public Information Advisor, Department of Indian Affairs and Northern Development.

Peter Hicks, formerly Assistant Chief of the Employment Section of the Labour Division, DBS, has been appointed Chief of the Labour Force Survey Section, which was recently transferred from the Special Surveys Division to the Labour Division.

Claude Hudon has been appointed Assistant Coordinator (liaison) with the Provincial Liaison and Consultative Services Staff. Mr. Hudon has been primarily engaged in a review of all DBS provincial cooperative agreements. Prior to joining the Staff, he was Head, Textiles and Clothing Unit in the Manufacturing and Primary Industries Division.

Mrs. Irene E. Johnson has been appointed Chief of the Analysis and Development Section, Labour Division, of the Economic Statistics Branch. Mrs. Johnson comes to DBS from the Department of Finance.

Richard G. Knapp has been appointed Chief of the Statistics Use Development Section of the Information and Yearbook Group. Mr. Knapp has had nine years of business experience including positions as Marketing Manager of a food processing company and General Manager of an importing distribution company.

Maurice A.J. Lafontaine has left his position of Assistant to the Director General of the Economic Statistics Branch of DBS to become Director of the Efficiency Evaluation Division, Planning Branch of the Treasury Board.

Bernard J. Lynch has been appointed Assistant to the Director General of the Economic Statistics Branch, DBS. Mr. Lynch joined the Bureau in 1957 and since December 1968 has been Chief of Foods, Beverages and Textiles in the Manufacturing and Primary Industries Division, Economic Statistics Branch.

Hugh MacDonald has been appointed Chief of the Manpower Planning and Utilization Section of the Personnel Division. Mr. MacDonald comes to the Bureau from the Department of National Revenue where he was Head of the Manpower Planning and Appraisal Section.

W.A. Nesbitt has been appointed Acting Director of the Special Surveys Division, where he has assisted in the transfer of the subject matter reponsibility of the Labour Force Survey to the Labour Division. Prior to this appointment, Mr. Nesbitt was Assistant Director of the Special Labour Force Division. He joined DBS in 1931.

Mrs. Sylvia Ostry, formerly Director of Special Manpower Studies, DBS, has been appointed a Director of the Economic Council of Canada. Mrs. Ostry is coauthor of the DBS Census monograph, *Working Life Tables of Canadian Males* and author of *Geographic Composition of the Canadian Labour Force* and *The Female Worker in Canada.* Prior to her work in Special Manpower Studies and Consultation she served as Assistant Director of the Labour Division and as Chief of the Research and Analysis Section.

William L. Porteous has been appointed Director of the Agriculture Division of DBS following the retirement of C. Parker, last May. Mr. Porteous joined the Bureau in 1956 and served as Chief of the Crop Section, and as Assistant Director of the Agriculture Division before assuming his present position.

W.G. Morris has been appointed Assistant Director of the Agriculture Division. Mr. Morris joined the Bureau in 1945 and from 1956 was Chief of the Farm Finance Section.

John D. Randall has been appointed Director of the Balance of Payments and Financial Flows Division, Economic Accounts Branch. Mr. Randall joined DBS in 1956 and became Chief of the National Accounts Section in 1966. After serving as an economist in the Resource Development Division of the Department of Finance during part of 1966 and 1967 he returned to DBS as an Assistant Director of the Prices Division.

J.B. Smith, Acting Director of Governments Division, Financial Statistics Branch has been appointed Director of that Division. Mr. Smith joined the Division in 1967 as assistant Director after working in the Taxation Division of the Department of Finance.

Dr. Michael L. Szabo has been named Co-ordinator of the Regional and Manpower Research Staff in a merging of the Regional Statistics Research and Integration Staff and the Special Manpower Studies and Consultation Staff. Dr. Szabo moves up from the post of Co-ordinator of Regional Statistics Research and Integration. Prior to coming to DBS he was Chief of the Economic Geography Division, Geographical Branch Department of Energy, Mines and Resources.

In October 1969 **Dr. Miles Wisenthal** was named Director of the Education Division of DBS. Dr. Wisenthal comes to the Bureau from McGill University where he was Associate Dean of the Faculty of Arts and Sciences.

Nicol LeSeelleur, Acting Director of the Education Division has retired after 23 years service in the Bureau. Mr. LeSelleur graduated from University of Western Ontario in Business Administration in 1938 and came to DBS in 1947.

David A. Worton, Chief of the Productivity Research and Analysis Section has been appointed Assistant Director of Central Planning and Programming, DBS. Mr. Worton will be particularly concerned with manpower and professional development.

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STATISTICAL OBSERVER

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STATISTICAL OBSERVER

VOLUME 4 / NUMBER 1 / APRIL 1971

The Statistical Observer is a publication designed to contribute toward informing economists, statisticians and related professionals throughout Canada about selected statistical and research developments undertaken in DBS, in other Federal departments and agencies, in provincial departments, in universities and in business and independent research organizations.

Suggestions and contributions of articles for publication should be addressed to the Editor, Statistical Observer, Information Division, DBS, Ottawa 3, Canada.

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The Statistics Act

The new Statistics Act was passed by Parliament on February 9, 1971 and given royal assent February 11. This Act, which will govern the operations of the Dominion Bureau of Statistics, will come into force on a date to be fixed by proclaimation of the Governor in Council. The new legislation repeals the present Statistics Act which was passed in 1918 and which, although amended several times, is out-of-date in many respects.

The new Act is the result of many years of consideration. A number of significant changes have been incorporated into it: obsolete sections of the existing Act have been removed and other sections have been redrafted.

The main changes are (1) modifications to the secrecy section which in some respects is redundant, (2) a new provision to clarify and strengthen federal-provincial relations in statistics by permitting an extension of co-operative agreements with provincial statistical agencies, (3) the inclusion in the Statistics Act of an item allowing the Dominion Statistician access to corporate tax returns (which is now permitted by other legislation) and a new provision allowing the Dominion Statistician access to tax returns of unincorporated businesses and individuals, and (4) a new provision giving the Bureau the duty to promote the avoidance of duplication in the collection of information by federal and provincial departments.

Other changes include a mandatory five year Population Census, and a five year Census of Agriculture unless the Governor in Council decides otherwise; a provision to make privileged all returns made to the Bureau and copies of returns in the possession of respondents; a provision to provide all public and private officials with an explicit legal justification for the provision of information to DBS by means of right of access by the Bureau to records relevant to statistics; an increase in the fines (but not in the imprisonment penalties) prescribed in the present Act; and a new section making it an offense to impersonate a DBS officer or enumerator.

The new Act also changes the name of the Dominion Bureau of Statistics to "Statistics Canada", and the name of the Minister's deputy for the purposes of the Act from the "Dominion Statistician" to the "Chief Statistician of Canada". The existing names may continue to be used for up to four years, to permit a smooth and gradual change in questionnaires etc.

Two central features of the present Statistics Act which are accepted throughout the world as essential to operate a statistical system effectively have been retained. The first of these is a legal obligation on the part of citizens to provide information to the statistical agency. Penalties associated with this legal power have been rarely used in Canada, but collection "under authority of the Statistics Act" is a necessary element in the process of persuasion by which data are normally secured. The second essential feature is a legal guarantee that information about particular persons or organizations will not be disclosed to their possible detriment. Secrecy of data provided remains an essential foundation for reliable statistics and far outweighs any benefits which others might derive from access to information relating to particular individual persons or businesses. However, as mentioned previously, there are some modifications to the secrecy section of the Act.

One is a change from absolute prohibition of disclosure of information contained in an individual return to prohibition against the disclosure of any identifiable individual information. Also, information obtained by DBS from another agency will retain the degree of secrecy it had with that agency rather than, in some cases, acquiring a greater degree of secrecy because it is passed on to DBS. The Act also allows lists of organizations dealing with products or providing services to be released, and employment-size ranges into which organizations are classified to be published. These are the major changes in the secrecy section.

The proposals for federal-provincial co-operation and the elimination of duplication in reporting are also very important. Co-operative joint collection arrangements with provincial departments, with the consent of respondents, will continue, but a new provision will recognize the special status of provincial statistical offices which are supported by legislation which provides protection for respondents equivalent to that afforded by the federal law and bring them within the national statistical system for specified surveys or subject matter areas. Such agencies, if they meet the requirements of the Act, would be able to collect data jointly with DBS, without the consent of respondents being required. All such agreements would require the Governor in Council's approval.

All the procedures relating to the changes in the secrecy clause and all federal-provincial agreements will be at the discretion of the Minister or the Chief Statistician. This is necessary to afford protection to the "third party" – the suppliers of information. Without the continuation of their excellent support, the requirements of producers and users of statistics would be frustrated. Considerable care has been taken in the new Act to meet the problems encountered by those who supply the information on which statistics are based. For example, access to the income tax returns of unincorporated businesses is expected to eliminate 10,000 small firms from the annual Survey of Manufactures and could, in the near future, greatly reduce the reporting burden of up to 80,000 small firms in a variety of areas. As another example, the avoidance of provincial and federal duplication of surveys is the essential reason for the co-operative agreements referred to previously.

In summary, the new federal Statistics Act contains benefits for the producers, the users and the suppliers of statistics in the statistical system, and is regarded as permitting the system to better meet the conditions and needs of modern society.

NEW PROJECTS

New DBS Branch Formed to Co-ordinate Design of Surveys and Computer Systems

A new branch has been created in DBS, combining into a single organizational unit the functions of survey methodology and computer systems development. The new branch is called Methodology and Systems and Dr. I.P. Fellegi, formerly Director of the Sampling and Survey Research Staff, has been appointed its Director General.

The Divisions involved in forming the new branch are the Sampling and Survey Research Staff, which was a part of Integration and Development Staffs, and the Computer Systems Development Division, formerly a part of the Operations and Systems Development Branch which will no longer function on a branch basis.

The formation of the Methodology and Systems Branch is a recognition of the importance of a co-ordinated approach to the design of surveys and the processing of data. It is intended to facilitate the automation of surveys in that automation involves a total systems approach to survey design and processing in which the two activities interact and influence one another.

At present, the Sampling and Survey Research Staff is involved in four programs:

1. studies designed to test and improve the reliability of survey and census operations and reduce their cost;
2. planning the methodology of surveys and censuses as elements of an integrated operation, from initial planning to final publication;
3. consulting services in the formulation of statistical standards of reliability and timeliness, the formulation of new approaches to statistical programs, including new developments in methodology and technology, and in the adaptation of the methodology of surveys and censuses to permit efficient computer processing; and
4. the development of general purpose computer systems applicable to the processing of a wide variety of surveys and censuses (such as general edit programs and data retrieval programs).

The Computer Systems Development Division provides advice and assistance to all DBS branches in the development of statistical programs which may require automatic data processing equipment, including computer systems analysis and programming. It has four sections: Advisory Services, Systems Analysis and Design, Program Design and Production, and Census Systems and Programming.

The duties and responsibilities of these Divisions are expected to remain basically the same in the new structural framework but greater emphasis will be placed on co-ordination and integration of their work.

The creation of the Branch has made a number of other organizational changes necessary. L.A. Shackleton, formerly Director General, Operations and Systems Development Branch, has been appointed Senior Advisor to the Dominion Statistician on computer operations and equipment. He will advise on the acquisition of computer equipment, and will explore the implications for the DBS data collection process of the use of computer technology by large corporations for maintaining their own records. A.B. McMorran will continue as Director of the Data Processing Operations Division but will now report directly to the Dominion Statistician. Another change is the transfer of the Management Advisory Services Group and its Chief, E.J. Wilhelm, from the former Operations and Systems Development Branch to the Finance and Administration Branch. Mr. Wilhelm will now report to H.L. Allen, Assistant Dominion Statistician (General Assignments).

Post-Census Farm Survey and Quality Check

An independent sample survey of 11,000 farms will follow the 1971 Census of Agriculture. The survey has separate programs to achieve two main objectives. One program is the Post-Census Survey (PCS) which is serving as a supplementary survey to the Census of Agriculture to obtain information concerning machinery, capital value, operating and capital expenditures and value of agricultural products sold. The second program is the Agriculture Quality Check (AQC). The objective of this program is to obtain a measure of the completeness and accuracy of the Agriculture Census enumeration on the number of farms, and the area of land and its use in farms.

The survey is in response to the demand from a number of organizations and industries serving agriculture, including the Canada Department of Agriculture, the Department of Regional Economic Expansion and the Canada Farm Machinery and Equipment Institute, in addition to the Agriculture Division, DBS.

The survey scheme used is a stratified multi-stage sampling design. The frame covers the entire 1971 Census universe, with the exclusion of Newfoundland, the Northwest and Yukon Territories and Indian Reserves. It consists of 70 strata (44 rural areas, nine urban areas, nine specified farms and eight areas with no farms reported in 1966 Census). The units within each stratum are selected with probability proportional to size of specific measure.

The survey will be conducted by the Agriculture Sub-division, Census Division, DBS, in co-operation with Sampling and Survey Research Staff, DBS. The provincial and regional estimates from this survey are expected to be available in July 1972.

Inquiries should be directed to R.S. Ellis, Agriculture Sub-division, Census Division, DBS, Ottawa 3.

Real Domestic Product Indexes Now on Monthly Basis

Production of Real Domestic Product Indexes for Canada on a monthly basis is a recent and significant statistical achievement of the National Output and Productivity Division, Economic Accounts Branch, DBS. The Bureau thus becomes the first major national statistical agency to put RDP indexes on a monthly basis.

The RDP indexes, previously published quarterly, now provide, in sharper perspective, a systematic framework within which to analyze trends in production in major industry groupings (manufacturing or trade, for example). In addition, the

indexes will provide information from which the sources of developing slack or emerging expansion in the economy as a whole can be pinpointed insofar as these can be detected by analyzing the output patterns of individual industries.

Real Domestic Product is a measure of the contribution of each industry to the total value of goods and services produced. The RDP indexes are comparisons of RDP over time, in relation to the 1961 base period. Thus, month-to-month movements in output can be compared, free from the distorting effects of price changes.

The new RDP series covers more than 120 individual indexes and industry aggregates, including the Index of Industrial Production with its 80 components which has been published on a monthly basis for many years. The series covers all economic activity in Canada and is grouped under the following main industry aggregates:

Agriculture
Forestry
Fishing and Trapping
Mines, Quarries and Oil Wells
Manufacturing
Construction Industry
Electric Power, Gas and Water Utilities
Transportation, Storage and Communication
Trade (Wholesale and Retail)
Finance, Insurance and Real Estate
Community, Business and Personal Service Industries
Public Administration and Defence

The RDP data are first published as advance information in the *DBS Daily* and then, with greater detail, in a monthly report, *Index of Industrial Production* (catalogue number 61-005). The monthly report provides seasonally adjusted figures for the 120 components for each of the latest six months.

Also included are data, before adjustment for seasonal variation, for the same 120 components for the latest five months and for the month of the preceding year corresponding to the latest month published. Annual averages for the past two years are also included.

The 80 components of the Index of Industrial Production (seasonally adjusted and unadjusted) are grouped under the headings: Mines, Quarries and Oil Wells; Manufacturing; and Electric Power, Gas and Water Utilities; and are shown in separate tables of the report.

Quarterly RDP indexes will, for the time being, continue to be published as a convenience to users. It should be noted that the quarterly indexes are a simple arithmetic average of the monthly indexes for each industry.

The publication of the monthly RDP indexes is the culmination of a major statistical development project which was started in 1959 and was carried on simultaneously with other major research and revision projects in industry output measurement.

Following the publication of the quarterly RDP indexes in 1963, a concerted effort was made to convert the entire RDP system to a monthly basis. The basic development work of the monthly measures was completed late in 1968, and in 1969, the indexes were computed on a regular monthly schedule but on an experimental basis. The quality, and particularly the timing, of the monthly indexes were improved considerably during this experimental period and publication on a regular monthly basis started in June 1970.

Work on the revision of RDP indexes for the 1961-69 period has been completed and the up-dated indexes are now available in a reference paper, *Indexes of Real Domestic Product by Industry, 1961-69,* catalogue number 61-510.

The purpose of this document is to present the final phase of the historical revisions to the industry real output system, the first phase of which was the publication in 1966 of revisions to the Index of Industrial Production to incorporate more up-to-date annual levels for the 1950's. The second phase extended these revisions to the rest of the RDP system and also featured the conversion of the entire RDP system for the 1960's to a 1961 weight and reference base. This phase of the revision was released in a reference document (61-506) published in 1968. The most recent reference document (61-510) shows revisions only for the period since 1961.

The revisions consist basically of the incorporation of more recent annual levels for all industries (including the results of the 1966 Census of Merchandising and Services), revisions to the 1961 Gross Domestic Product at factor cost distribution which forms the basis of the industry weighting system, and the incorporation of the total activity concept in manufacturing.

Inquiries should be directed to Miss A. Ansmits, Industrial Output Section, National Output and Productivity Division, Economic Accounts Branch, DBS, Ottawa 3.

DBS Education Division Reorganizes in Response to Many New Needs

Since the early 1950's, education has been going through a period of dramatic growth and change. Increased enrolments, higher participation rates at the post-secondary level and spiralling costs have moved education into the position of Canada's leading "industry". In response to these changes and in anticipation of future changes, the Education Division of the Socio-Economic Statistics Branch, DBS, has radically altered its organization. The former Sections – Elementary-Secondary, Higher Education, Adult Education, and Vocational Education – have been regrouped into separate subject-matter sections concerned with Teachers, Students, Finance, Facilities, and Cultural Information. Under a Research Co-ordinator are sections dealing with Projections, Research and Educational Economics.

The operations of the Division have been regrouped under a Co-ordinator who has responsibility for a streamlined Operations Pool, Computer Systems, Publications, and Information. The main emphasis is toward the creation of automated and integrated data systems.

Student enrolment statistics are now beginning to reflect changing administrative structures. The disappearance of promotion by grade in the elementary schools, wider option choices at the secondary school level, the new community colleges, more part-time university students – all of these require

new and different statistical procedures. Student flows through the various levels of the educational system are now the object of some research and observation. Detailed statistics on all post-graduate students are now being developed, and will prove valuable for manpower planning. Enrolment data, provided by the Education Division of DBS, are being used as the basis for financial support of the Minority Language Program, and further uses for this type of data are anticipated.

Collection of data on elementary-secondary enrolments involves close co-operation with provincial departments of education. (At the post-secondary level, most of the data are collected directly from the institutions.) Recent developments suggest that more detailed data will be required on student characteristics as the need for exact planning becomes evident. The creation of new survey instruments and the revision of existing collection documents are carried out in collaboration with both respondents and users.

The Financial Information Section has been greatly strengthened with the result that more comprehensive and timely statistics on educational finance are about to be published. Total educational expenditures have increased during the past decade to the level where more than $7 billion are now required annually to keep the educational enterprise afloat. Publications such as the *Survey of Educational Finance* (catalogue number 81-208) and *Canadian Universities: Income and Expenditure* (catalogue number 81-212) are providing important data on educational costs. A recent publication, *Post-Secondary Student Population Survey, 1968-69,* undertaken for the Department of Finance in support of its student loan program, is a source of hitherto unavailable information on a large representative sample of this student group.

Studies on educational finance carried out by a number of federal departments and agencies and by the Council of Ministers of Education are, to a considerable extent, dependent on data supplied by the Financial Information Section. Increased resources allocated to this Section will have the effect of broadening and deepening the data base needed for a variety of research topics.

Working closely with the Canadian Association of University Business Officers, the Financial Information Section is developing a new reporting document which will provide more detailed and meaningful classifications of income and expenditures than have been previously available.

The growth of part-time enrolments at both the secondary and post-secondary levels has necessitated the committment of increased resources to the observation of this facet of education. As a result of recent initiatives, the Education Division will be producing a new statistical series on part-time education for adults. The first of this new series, on adult enrolments in secondary schools, will be released this spring. Future publications will provide data on adult education activities in the community colleges and universities.

The 300,000 full-time teachers of Canada form a unique and highly specialized labour force about which an increasing amount of information is sought. For some provinces, individualized data files for elementary-secondary teachers are maintained by means of exception reporting: a similar method is now being examined for the university teachers of Canada. The use of individual files provides a maximum of flexibility for studies of mobility, supply and demand, and it creates a national register of professional characteristics of highly qualified manpower. A national system of classification, developed in collaboration with federal research funding agencies, has been generally accepted.

A most recent addition to the subject-matter sections of the Division is the Facilities Information Section. Its purpose is to develop inventories of physical plant and equipment related to education. A survey, about to be launched, will provide national statistics on school transportation, an area in which no data now exist. Investigations are underway to examine the feasibility of surveying the inventory and the use which is made of audio-visual equipment in education.

The general interest being shown in cultural affairs is reflected in the activities of the Cultural Information Section, a new arm of the Education Division. In addition to the surveys on libraries (previously carried out by the Adult Education Section) and a revised survey on museums and art galleries, the new Section is developing statistical programs related to handcrafts, drama, literary awards, and is exploring possibilities in a number of other related fields.

Among recent special projects of the Division is a publication on 100 years of education in British Columbia in honor of that province's centenary. A similar publication will be issued shortly on education north of the 60th parallel. Regional publications, covering the whole range of educational activity in considerable detail, on the Atlantic Provinces and Western Canada will also make their appearance during the current year.

The statistical program of the Division is designed to serve the varied needs of a complete spectrum of users from government departments and agencies, at both the national and provincial levels, to individual researchers. In addition to its regular surveys, the Division is carrying out a number of special projects under contract from government departments. These include surveys, analyses and projections.

The effects of the revitalized statistical program of the Education Division should become fully apparent during the next 12 to 14 months. *More information on the Education Division's activities may be obtained from Dr. M. Wisenthal, Director, Education Division, Socio-Economic Statistics Branch, DBS, Ottawa.*

Pilot Survey, For-Hire Truck Commodity Movements

A pilot survey of commodity movements by truck was conducted by the Transportation and Public Utilities Division during the summer of 1970. The purpose of the study was to determine the feasibility of collecting information on the origin and destination of goods transported by for-hire trucks in Canada by sampling motor carrier firms' shipping documents. These documents, variously known as probills, waybills or bills of lading of one kind or another, contain information on the commodity

transported, weight and rate, together with the origin and destination of the shipment.

Representatives from the Field Division, assisted by representatives from the Sampling and Survey Research Staff and the Transportation Division, visited some 200 trucking companies across Canada for the purpose of selecting 100 shipping documents from each firm. In this way, information for the pilot survey was obtained from the 20,000 documents selected. Various experimental tabulations and cross-classifications of this raw data were summarized and the results expanded to universe totals. Origins and destinations of shipments based on some 4,000 city pairs were analyzed to provide an indication of interregional commodity flows.

The pilot survey established the feasibility of conducting a study of commodity movements by truck using this method and as a result, a full scale sample survey of 150,000 documents, involving more than 500 motor carrier firms, will be conducted during the summer of 1971. The results are scheduled to be available around the end of the year. This survey is expected to fill an important gap in commodity flow statistics.

Inquiries should be directed to P.T. Crosby, Head, Road Transport Unit, Transportation and Public Utilities Division, Economic Statistics Branch, DBS, Ottawa 3.

Economic Research Branch Formed to Serve Industry in Alberta

The Economic Research Branch, a new branch of the Department of Industry and Tourism, Government of Alberta, has been formed to undertake feasibility studies and detailed market analyses when it is indicated that manufacturing opportunities in the province are not being fully exploited. The Branch will also undertake analyses of economic conditions and future trends in Alberta.

The information developed by the Branch is expected to be of particular interest to the manufacturing industry, to the Alberta Department of Industry and Tourism, and to other provincial government departments and agencies.

Inquiries should be directed to D.H. Sheppard, Senior Economist, Economic Research Branch, Room 1502, Centennial Building, Edmonton, Alberta.

Ontario Plans New Collections, System of Common Identifiers

The Ontario Statistical Centre, established in 1964, is developing as a co-ordinating agency of statistical activities in Ontario, and is planning a number of new projects within the framework of this objective.

Future plans include:

1. Extension of the annual Census of Manufactures (which it conducts on a co-operative basis with DBS) to cover the 70 top industries in Ontario in place of the 25 on which it now reports. The 70 industries collectively account for 90 per cent of the total value of manufacturing production in Ontario.

2. Strengthening of field work and editing in the Census of Forestry.

3. Acceleration of studies on common information identifiers. Priority is being given to a study of the feasibility of developing a common organization identifier for both the government and the business community to provide linkage in the transfer and exchange of statistical information among various government departments and between industry and government. A work team will also continue its efforts to study the feasibility, cost and associated administrative problems and advantages related to a proposed common person identifier.

4. Development of new data sources through extensive use of administrative records for use by the Regional Development, Economic Analysis and Economic Planning Branches of the Department of Treasury and Economics and by other government departments.

5. Strengthening the Centre's capability to initiate and carry out continuing field surveys such as those required for the Ontario input-output model and the provincial accounts.

6. Subject to priority considerations, development of a survey of the service and construction industries in the province.

In other developments, it is expected that the present legislation under which the Centre operates will be amended to strengthen the Centre's centrally oriented position within the Ontario Government. This also will facilitate the province's entry into co-operative statistical arrangements with other government agencies, especially DBS.

In this connection, as work on the 1971 Census of Population and Households progresses, the Centre will assume more of the characteristics of a central agency. It will provide facilities which will enable Ontario Government census users to have access to: a library of computer programs for use with census summary tapes; summary tapes and the appropriate documentation; technical assistance in census data usage; and, where necessary, computer processing support.

The Centre anticipates that these activities will continue to develop within the overall framework of a central information system designed to supply data for the continuing processes of analysis, policy formulation, and assessment, in areas where the government must address itself to the needs of the socio-economic environment.

Extensive New Programs Planned in Merchandising and Services

The DBS Merchandising and Services Division, Economic Statistics Branch, is making extensive changes to its monthly retail trade survey, has wide-ranging improvements under way in the methodology and coverage of the 1971 Census of Merchandising and Services, and is expanding its coverage of the accommodation and food service industries in Canada. These programs are designed to reduce statistical gaps in these large and fast-changing industries.

Retail Trade Survey

In the new retail trade survey, the sample has been enlarged from 14,000 firms to 25,000. The sample was selected from a list frame based on the Labour Division's employment, payrolls and man-hours survey, supplemented by an area sample and the current chain store and department store listings. The new sample is expected to yield these results:

1. Substantial improvement in the quality of the published retail trade estimates through increased coverage at the kind-of-business level, improved methods of estimating non-response, and rapid adjustment of the sample for "deaths" of firms.
2. The addition of monthly sales estimates by detailed kinds of business for the Yukon and Northwest Territories (at present combined with British Columbia) and for four metropolitan areas – Montreal, Toronto, Winnipeg and Vancouver. Until now, estimates have been published at the provincial and national levels only. (It is hoped that the number of metropolitan areas for which data can be made available will be expanded as a result of experience gained with these four areas.)
3. A significant increase in the number of kinds of business for which data will be published at the metropolitan area, provincial and national levels.
4. A planned *early* estimate of total monthly retail sales for Canada and the provinces is scheduled for release approximately three weeks after the end of each reference period.

1971 Census of Merchandising and Services

The 1971 Census of Merchandising and Services will cover more kinds of business, should yield much more detail than previous Censuses and will make greater use of computer techniques and automated collection procedures.

Planning for the 1971 Census began in April 1969 with an intensive review, by a committee representing the Merchandising and Services Division and all major internal DBS users of merchandising statistics, of concepts and definitions. Three principles guided the committee in its deliberations: improved quality of data output; increased coverage in detail, especially in the service area; and improved timeliness in the release of data.

The review also included a study of revised Standard Industrial Classification groups in the retail, wholesale and service trades; survey concepts and methodology; computer application; and questionnaire design and content. The committee's recommendations on definitions and questionnaire content were then circulated for appraisal and comment to users within DBS, to the private sector and to federal and provincial statistical and economic planning agencies. On the basis of suggestions received, changes or modifications were made wherever practicable.

For the Census itself, present plans call for a highly automated collection and editing program. Areas of special emphasis will be the solution of classification and conceptual problems in data collection in the wholesale trades and a further improvement in the quality of data published for the service sectors. As well, better information on the service trades will be made available through more careful planning than was previously possible, and through the development of more accurate mailing lists in those areas where under-enumeration has occured in the past or where no coverage existed, for example, professional services.

Service Trades Surveys – Accommodation and Food Service Industries

In the service trades, high priority is being given to the development of a long-range program for the production and publication of more comprehensive and timely data. The first step is the expansion of data available on accommodation in Canada. In this project, DBS is working closely with the Office of Tourism of the Department of Industry, Trade and Commerce, with provincial tourist bureaus, and with various national and provincial hotel associations. In 1969, the Hotel Survey was expanded to include the activities of motels, tourist homes and cabins, tourist camping grounds, hunting and fishing camps, and recreational outfitters. On the basis of the first year's experience it is hoped that some limited 1970 data on these added activities may be published.

Concurrent with the undertaking of the new accommodation survey is the study of the means by which improvements can be made in the statistical series on restaurants, including the rapidly expanding "fast-food" establishments. Franchising in the food and accommodations fields – another fast-growing type of operation – will be surveyed in 1971 covering 1970. Present plans are to survey franchising in the service trades every three or four years.

Merchandising and Services

Other plans call for:

- A major effort to improve the quality, coverage and timeliness of retail inventory data, using the new retail trade sample to provide the frame from which to select a sub-sample. Firms in the sub-sample will be asked to supply inventory data on a monthly basis.
- A study of consumer credit data requirements, in an effort to improve the quality of data on credit outstanding on the books of retail stores.
- A commodity survey of retail trade covering 1973 activities and for every second or third year thereafter, to enquire into the sale of broad commodity lines by selected kind of business.

More details of the surveys mentioned in this article can be obtained from G. Snyder, Director, Merchandising and Services Division, Economic Statistics Branch, DBS, Ottawa 3.

Labour Force Survey

A new policy has been put into effect regarding the release of data from the Labour Force Survey. There are three aspects of the new policy. The first is an expansion in the amount of data to be published in the existing publications. In the past, a great deal of data was released by means of special tables, some with restrictions placed on them because of the high sampling variability of some of the estimates. An expanded annual publication giving seasonally-adjusted series, an expanded regular monthly bulletin, and an occasional publication about unemployment will be released shortly. Towards the end of 1971, a new quarterly publication will be released which will give, among other things, data from supplementary surveys which are carried out in conjunction with the Labour Force Survey.

The second aspect of the release policy is a great expansion of the amount of data available on CANSIM. The first phase of this expansion will be completed this spring.

The final aspect of the release policy is a change in the criteria used in establishing which data are to be compiled for public release. In the past, data with a high sampling error were not released on the grounds that such data were misleading. However, with the increasingly sophisticated uses to which the data are put, this policy required modification. The new policy creates two categories of data for release: unrestricted release and cautioned release. Data in the unrestricted release category will be published or made available without restriction as at present. Data in the cautioned release category are data with high sampling variability and these data will ordinarily be published in the form of ranges, or made available on CANSIM with a cautionary note indicating the high sampling variability. Users of data in this latter category will be free to use the statistics as they see fit, but will be under the obligation to carry the cautionary note in any further release they make of the data. The new policy will result in a very considerable expansion of the amount of data for general release although, because of the almost countless cross-classifications available from the Labour Force Survey and because of the limited resources available to compile the new series, cells with extremely high sampling variabilities cannot be tabulated or released.

The material in this article was supplied by P. Hicks, Chief, Labour Force Survey Section, Labour Division, Economic Statistics Branch, DBS, Ottawa 3.

New Checking and Editing Program now under Evaluation at DBS

The first version of a checking and editing program for statistical files (CHEP) is being used in the Sampling and Survey Research Staff, Methodology and Systems Branch, DBS.

The program, in which an attempt was made to generalize typical requests for checking and editing operations, operates on one input file. It can create one output file with correct records and/or one file with erroneous records. The functions included in this version of CHEP are:

1. checks of the values of various data fields (variables) at elementary levels for each record in a defined input file;
2. replacing the value of a variable by any constant, any other variable or part of that variable (within the same record);
3. omitting an erroneous record from the file depending on the result of checks, on any other given condition, or by direct record identification; and
4. ending the processing of the file if errors exceed a specified number or if unacceptable data conditions occur.

The CHEP program is so designed that any of these functions and any output options associated with any of them may be requested in any combination and any number. A whole sequence of editing commands requesting performance dependent on values of different variables in the file may be passed to the program for action. The sequence is then translated into one operating program and performed on each record in the file once.

Only the most common editing functions have been included in the first version of CHEP. An evaluation of the need for other and more complicated functions is now under way and a second version of CHEP is being developed.

Inquiries should be directed to Dr. Jana Outratova, Sampling and Survey Research Staff, Methodology and Systems, DBS, Ottawa 3.

Construction Data Program Moves Ahead with Census of Electrical Contractors

The DBS program to expand statistical coverage of the construction industry in Canada moved a further step ahead in 1970 with the first of what is planned to be an annual census of electrical contractors. Questionnaires were sent out in May 1970 to 5,000 electrical contractors across Canada to collect information about their 1969 financial year.

The Census, developed in the Business Finance Division, Financial Statistics Branch, DBS, seeks to provide information on the number of contractors, their total employment, total sales, legal entity and certain operational ratios.

Methods used are basically the same as those which produced 1968 census data on the mechanical contracting trades (now also being surveyed for 1969).

In developing an expanded series of construction industry data, the decision to examine one trade at a time rather than the whole industry offers several advantages. The concentration of efforts on one trade at a time is particularly important in the construction industry because of its many small establishments and its constantly changing conditions. This method treats each trade as unique, with different and, hopefully, more pertinent information possible from each trade.

The experience gained in one survey provides a useful guide to developing subsequent surveys. The mechanical contracting data have been published in a 53-page report, *The Mechanical Contractors Industry, 1968,* catalogue number 64-204. The report gives total value of construction work performed by contractors and others classified by new and repair work, by principal type of construction, and by principal type of construction by industry. Also included are selected characteristics of construction work performed by the mechanical

contracting industry, such as: establishments classified by trade by size group, by trade by type of construction, by trade by type of work, by trade by type of contractor, by trade by legal entity, and by type of trade by province.

Publication of results from the census of electrical contractors is expected this summer, and work will continue on other trades until all have been surveyed. Reports on each trade will be issued annually following the first survey.

Inquiries should be directed to P.N. Triandafillou, Chief, Construction Section, Business Finance Division, Financial Statistics Branch, DBS, Ottawa 3.

New Base Year and Revisions to Export and Import Price Indexes

Export and import price indexes, which measure the change in the price of commodities in international trade, are produced by the External Trade Division, Economic Statistics Branch, DBS, and are now calculated on the basis of 1968 prices equaling 100. The previous base year was 1948.

Updating of the index is a result of a five-year program in the Division in which concepts and base weights were reviewed and revised to provide a more accurate indicator of price changes in Canada's foreign trade, permitting better evaluation of the nation's competitive position.

In the new indexes, greater emphasis is placed on stage-of-fabrication data rather than on the component-materials data used in the 1948 index. This is the approach used in producing the Standard Commodity Classification from which the external trade commodity classifications are derived.

Reflecting the changing and more diversified pattern of Canadian international trade, some commodities that were important in 1948 are less so today; others have become more significant; and many new products have emerged. Close account has been taken of all these changes in selecting representative commodities for the new index. For example, the new Export Price Index includes, for the first time, crude petroleum and natural gas, and has expanded coverage for chemicals. Raw wool and locomotives are among the products dropped from the index. Likewise, the Import Price Index now includes telecommunications equipment and natural gas, and greater detail for non-farm machinery and meat products. Potatoes, coal and china clay are among the commodities dropped.

The relative value of each commodity class within each group was used as a weight to calculate the group index and the process of aggregation was repeated to produce the total index.

Indexes for the following five sections have been compiled for the revised series: live animals; food, feed, beverages and tobacco; inedible crude materials; inedible fabricated materials; and inedible end products.

Export and import price indexes are published monthly for the current and two preceding years in *Summary of Exports,* catalogue number 65-002, and *Summary of Imports,* catalogue number 65-005, available from the Publications Distribution Unit, DBS, Ottawa 3.

More information on the new indexes can be obtained from G.A. Richardson, Director, External Trade Division, Economic Statistics Branch, DBS, Ottawa 3.

New Brunswick Develops Indexes of Small-Area Economic Activity

Sub-provincial indexes of aggregate economic activity, a survey of paramedical personnel, and a study of migration patterns are three of a number of programs being carried out by the Office of the Economic Advisor in New Brunswick.

A wide-ranging review of the province's statistical needs and programs for meeting them began in the summer of 1970. The desirability of Statistics Act legislation and the establishment of a provincial statistics bureau was studied. Present practice in New Brunswick is to divide economic and statistical functions between the Office of the Economic Advisor, which responsible for short-term economic and statistical services, and the Development Policy Secretariat, which conducts long-term economic research for planning purposes.

Sub-provincial indexes of aggregate economic activity have been developed for five economic regions. Indicators based on four series are available on a county basis. They are: taxation statistics, liquor sales, electric power consumption, and telephone billings. Models were first developed relating these series for the province as a whole to a Gross Provincial Product series and then applying regional values to the models. Some comparisons of general growth rates in various regions have been made possible as a result.

A survey of paramedical personnel, conducted by the Office of the Economic Advisor and the Department of Health and Welfare from information supplied by the medical associations and the employing institutions, inquired into personnel shortages, the adequacy of training programs, and likely manpower requirements during the next four years.

The Tourist Development Branch collaborated with the Office of the Economic Advisor in studies of various aspects of the tourist industry. One, aimed at evaluating the role of travel and recreation in the provincial economy, provided information on the number and locations of tourist establishments and their seasonal employment and receipts. The data source was the Census of Service Trades, especially the Hotel, Tourist Camp and Restaurant Group.

The seasonal effect of tourism on the overall economy was also studied using monthly administrative records such as sales tax receipts by kind of business, liquor and gasoline sales, restaurant receipts, and employment.

The next step will be to examine travel activities throughout the province. Another part of the study – to give an indication of plant value for restaurants, places of accommodation, campgrounds and gift shops – used the assessed value of these businesses as provided by the provincial uniform property assessment records of the Department of Municipal Affairs.

Some interesting migration patterns have ben uncovered in a small survey using information from New Brunswick Telephone Company records. Of some 5,400 telephone subscribers who

reported changes of address in 1967, 45 per cent moved out of the province. The destinations given were: Ontario 28 per cent, Nova Scotia 22 per cent, and Quebec 18 per cent. Forty-five per cent of the moves within the province were to three large urban centres. The survey also revealed differences in destinations for migrants of the two main language groups. English-speaking migrants tended to go to Saint John, Fredericton, other Atlantic Provinces and Ontario; French-speaking migrants tends to move to Moncton, Quebec, the United States and predominantly French-speaking areas of New Brunswick.

Inquiries should be directed to the Office of the Economic Advisor, Government of New Brunswick, Fredericton, New Brunswick.

Reorganization of QBS Brings New Programs in Four Areas

The reorganization of the Quebec Bureau of Statistics last year is now showing results in a number of new plans and programs which are expected to provide more effective assistance to the Government of Quebec in studying and controlling the direction of economic and industrial policies.

These plans and programs call for the expansion of activity and redeployment of resources in four broad areas: economic statistics; financial statistics; socio-economic statistics; and classifications, codes and lists.

Economic Statistics – Until recently, the work of QBS in this area measured the general components of production activity. The objective now is to move into an input-output concept to reflect interindustry relationships in terms of products and services offered by one sector to another at the primary, secondary and tertiary levels.

Present uses of the Quebec Economic Accounting System have directed the efforts of QBS to commodity statistics. The current system, whose base year is 1961, is now being updated to a 1966 base. In addition to updating, the new system will be extended to include 310 categories of goods distributed in 59 productive sectors (subdivided into 77 groups), and 14 non-productive sectors. Six lines of products, expressed in volume, will also be incorporated. Data from outside the system will be added at intervals, making it possible to obtain periodically the main aggregates of the conventional national accounts as well as global figures for economic activity.

In manufacturing, QBS is involved in two programs in addition to collaborating with DBS in the annual Census of Manufactures. One program, which started with the 1967 questionnaire, involves the computerization of manufacturing data. QBS has worked out an original commodities location and identification method which makes possible a wide range of arrangements or operations including those for the updated economic accounting system.

In merchandising and services, QBS co-operates with DBS in surveys of tourist accommodation and carries out a number of separate surveys into interprovincial trade. For the 1970 Accommodation Survey, the data is being collected by QBS and the information is passed to DBS after collection and editing. In 1971, QBS plans to extend this service to include camping grounds and outfitters.

Economic conditions in Quebec are examined by a quarterly sampling, currently of the manufacturing sector only. The objectives are to obtain data on: total value of shipments, stocks of raw materials, goods in process of production, and stocks of finished products; number of employees and their function; production capacity used; and sales movements. Changes in the survey are expected as a result of the experimental work carried out in 1969 and improved accuracy is anticipated in 1970.

Financial Statistics – QBS is working in two areas: the activities of financial institutions and financial flows. The Quebec Bureau has produced series of detailed data on each aspect of the operations of real estate brokers, co-operative savings, and trust companies. This coverage is to be extended to cover sales financing, small loan, mortgage loan, and discount companies. The data on these establishments will also be arranged in an integrated universe to facilitate the study of financial flows.

QBS is also planning a census of all calls for savings made in the form of stocks and bonds issued in Quebec. A later stage of the work should endeavour to ascertain what sums were actually invested by Quebec in answer to such calls.

In the fields of public and private investment, QBS plans the regular collection of data on the gross formation of capital in machinery and equipment with the object of providing measures of gross and net stocks of capital. The intention is to identify information by nature of activity and by region to meet the needs of agencies engaged in regional development and industrial promotion activities.

Socio-Economic Statistics – QBS will now devote more effort to statistics in this area, especially those relating to population and the labour force.

Currently, QBS is producing statistics on the general characteristics, trends and interrelationships of marriages, births and deaths. This work will assist analysis of the demographic structure, and production of improved population estimates.

In labour force data, QBS is attempting an estimation of the rate of participation of the population in the labour force. Greater use will also be made of information produced by the annual survey of wage rates to measure the occupational structure by kind of industrial activity

QBS also has a program under way to measure the occupational structure of the labour force in the governmental, public and semi-public sectors and such factors as seasonality and mobility, and to establish comparison factors for studying the relationship of employment in these sectors to the labour force as a whole.

Classifications, Codes, Lists – A new QBS program in this area is a revision of the List of Enterprises, updating the list from 1967 to 1969. An interdepartmental committee, established by the Government of Quebec, has recommended that a Central Index of Enterprises be created which would permit the grouping, standardizing, harmonizing and control of the basic data necessary for the proper identification of enterprises at these levels:

nominative, legal, administrative, financial, economic and territorial.

Manitoba Working on Three Basic Data Programs

Manitoba's statistical agency, the Interdepartmental Statistics Committee, has three projects under way or nearing completion.

A population project, using Manitoba Hospital Commission records as a data source, seeks population figures by geographic location and government jurisdiction, sex and age. With additional processing, characteristics such as place of work and occupation will be available.

Another project – a computerized voucher accounting system for the province – is now fully operational. It has undergone a period of experimentation during which the new system and the manual system were used simultaneously. With the successful conclusion of the tests, the manual system was abandoned.

The program will permit the identification of expenditure by program, responsibility centre, activity, sub-activity, and economic object of expenditure. With the implementation of Planning, Programming and Budgeting (PPB) systems now in the first stages, the computerized system should permit more adequate identification of program costs by object of expenditure, and should provide basic data for regional development planning and analysis, and for the application of more sophisticated input-output models.

A third project, the Interlake Facts Guide, is an information package which contains basic regional data needed for Interlake census sub-divisions and may become a model for information requirements in regional development planning. It gives as comprehensive a picture as possible of resources of the region, of resource development, resource use, and resource productivity. From a study of this information, a much improved form of regional development planning is expected.

DBS Development in Four Areas Outlined to CEA Membership

The Dominion Bureau of Statistics organized a one-day session at the Canadian Economics Association's 1970 annual meeting held in Winnipeg. Senior officers of the Bureau gave four papers outlining recent developments in DBS. The subjects covered were: merchandising and services statistics, census data research needs, regional statistical needs, and educational statistics. Digests of the four papers follow.

Developments and Plans in Merchandising and Services Statistics, by G. Snyder, Director, Merchandising and Services Division, Economic Statistics Branch. Mr. Snyder pointed out that DBS is, at present, focusing a great deal of attention on the merchandising and service trades, principally because of their rapidly growing importance in the Canadian economy. He also cited a number of serious gaps in the statistical coverage of service trades, noting such omissions as engineering and scientific services, legal services and trade associations. Other omissions noted by Mr. Snyder were such non-profit organizations as recreational clubs, rowing clubs, tennis courts and yacht clubs. He mentioned a number of steps being taken by DBS to remedy this situation during the next few years. (Other plans outlined by Mr. Snyder relating to the 1971 Census of Merchandising and Services and various proposals for improving the quality and timeliness of current series in retail trade and other sectors covered by the Division are reported in more detail in the *New Projects* section of this issue.)

Meeting Research Needs for 1971 Census Data by Dr. L.O. Stone, Acting Assistant Director (Research) and H.G. Beyer, Technical Co-ordinator, Research Sub-Division, Census Division, Socio-Economic Statistics Branch. Dr. Stone and Mr. Beyer pointed out that although the resources devoted to the gathering and processing of census data may be viewed as a national investment in taking an inventory of human and economic resources, they also provide a basis for describing and analysing various features of Canadian population and infrastructure by devising measures that are applied to the raw census data to create selected statistical series. The authors visualized these series as indicating the patterns of variation between Canadian regions, sub-populations and time periods, regarding population size and its components, social and economic characteristics of the population, and various characteristics of economic activity and of society's physical establishment. By interrelating several of the derived series to reveal important coincidences of characteristics among Canadian regions and sub-populations, and by showing the extent to which some of these coincidences may support explanations of variation in important properties of the Canadian population, society or economy, the pay-off from the national census investment is increased significantly.

The authors stressed the point that there was an increasingly wide recognition that such analyses of census and other socio-economic data form an aspect of statistical information that is of vital importance to more rational policy making, resource allocation and investment decision making by government, business and consumers. They noted, however, that to uncover this initially

hidden but major dimension of statistical information, a considerable amount of resources must be invested in the synthesis and analysis of the profusion of data in census tabulations.

Since the 1961 Census, the requirements of government and business agencies in Canada for more systematic rationalization of decision making and planning have led to a steadily increasing demand for analytical research on important socio-economic variables. The systematic analysis, interpretation and forecasting of statistical series comprises a major part of the underpinnings of any such rationalization effort. Two contributions DBS would be making in population studies, based on 1971 Census data, were outlined.

1. Researchers would be given access to census data on a scale and degree of flexibility and timeliness that was not possible in 1961.
2. DBS would contribute to the development of a program of studies of patterns and trends in the size and characteristics of the Canadian population and economic activity (to the extent that the latter is covered in census data). In the design and execution of this program, inputs from DBS staff would be combined with those from other government agencies and from the academic and business communities.

In addition to providing individual researchers with information through custom computer programs, a 1971 census subcommittee has been established to help identify the data base needed for the research program to be sponsored by DBS. Included in the sub-committee are researchers from various DBS divisions and from other government agencies.

Four different types of publications which may result from the 1971 analytical research program were listed in the paper by Mr. Beyer and Dr. Stone.

1. A small number of census monographs each of a few hundred pages, covering various aspects of a general subject.
2. Smaller analytical studies which would present intensive investigation of more narrowly defined topics or hypotheses.
3. General review bulletins which would give broad but concise highlights of the patterns shown by census data on a given subject.
4. Special tabular reports containing detailed information focusing on a specific population or variable, in cross-tabulations that are not available in regular census publications.

DBS Approach to Regional Statistical Needs, by Dr. M.L. Szabo, Co-ordinator, Regional Manpower and Research Staff, Integration and Development Staffs.

Dr. Szabo outlined the nature of the DBS response to a large and quickly developing demand for data on a regional basis – a demand dictated by a change of approach to regional disparities by the federal government in the 1960's through direct involvement in regional planning and development.

The term "region" was defined as referring to any area breakdown of the national aggregate, provincial and sub-provincial. There was no single set of regions for which all series were presented. The feasible and analytically useful levels of regional breakdown depended on the particular series; the objective was to provide the greatest statistical detail by region determined by the type of data, the vehicle of collection, the purposes for which data were required, the confidentiality and cost requirements. The main features of the DBS regional data program were summarized as:

1. To supplement census data with estimates of the most needed socio-economic data published annually or more often for sub-provincial areas, beginning with total population, money incomes, employment and unemployment.
2. To provide more regional detail in existing subject-matter programs whenever technically feasible and as resources permitted.
3. To increase the usefulness of existing sub-provincial data by subjecting them to analysis to reveal regional trends and changing relationships.
4. To use the statistical contents of large administrative data files such as family allowance and income tax statistics, provincial school enrolment data, municipal assessment data, etc.

In light of developments in the social sciences in recent years and of what could be anticipated in the future, Dr. Szabo defined the function of a regional statistics program as providing stock or flow data, or both, on socio-economic indicators which are potentially useful in statistical models constructed for planning and evaluating regional policies designed to promote regional growth and social adjustment.

Because the amount of data needed to fulfill these requirements was beyond the capacity of DBS, the only practical approach was to develop new regional data in a measured order of priority to fill existing gaps. DBS adopted three principal ways of approaching development of new regional data:

1. Further development of the regional dimension of establishment-based economic statistics which at present are expressed as national or provincial aggregates.
2. Provision of greater flexibility in the present statistical information system so that the required data could be produced in a relatively short time for regions of specific interest. This could be accomplished by further developing the household survey capability, by instituting an establishment survey capability with similar flexibility, and by developing automated data recovery capabilities to provide the needed information from existing sources selectively with respect to regions and subject matter.
3. A further increase in the annually or more frequently available small-area data estimates on the population and the labour force.

In development of a regional dimension in establishment-based economic statistics in DBS, it was considered that the most feasible approach was a data system that would be flexible and suitable for different combinations – spatially, industrially and structurally. One reason for this approach was the fact that provincial authorities would eventually demand different sets of provincial accounts suited to different policy requirements and analytical capabilities. Such an approach, however, would not preclude the simultaneous or subsequent development of regional non-establishment-based information leading to other aggregates such as consumer expenditure and interregional flows of goods and services, if resources permitted. There were several advantages to the approach under discussion:

1. Development of the data base within the framework of the system of national accounts would ensure its planned and progressively phased development in an integrated manner.
2. The flexibility of such a system would prevent the commitment of DBS to a particular system at too early a stage.
3. It would permit adaptation to the policy needs and resource capabilities of the provinces and possibly smaller units and would give the provinces more opportunity to determine the kind of system of greatest benefit to them.

A second approach envisaged greater flexibility in the expansion of information systems such as the household surveys. The monthly labour force survey was increasingly being used in an expanded role to produce provincial data on family incomes and assets, and the family expenditures survey would also provide some provincial and sub-provincial data in future surveys. However, a new household survey capability, now in the planning stage was envisaged which would be basically similar to the monthly labour force survey but would be able to switch from one subject matter to another and be able to take national, provincial or even local area surveys. The new survey capability would require several years to develop and would be largely self-financing.

A third approach to the production of new regional data is the development of a small-area data estimation program. This program grew out of the demand for more timely data for small geographical areas such as counties, census sub-divisions and metropolitan areas. The initial attempt had been to provide estimates of population, employment, unemployment and money incomes of individuals. Population estimates had been published for 1967 and 1968. Research on unemployment and money incomes was underway and some work on estimates of labour force and internal migration had been done.

A gradual increase in the capacity in DBS to undertake regional statistical analysis, Dr. Szabo concluded, was also important in improving and increasing the regional statistical information available from the Bureau.

Developments in Educational Statistics for Economic Planning, by Dr. Miles Wisenthal, Director, Education Division, Socio-Economics Statistics Branch.

Dr. Wisenthal, in dealing with the magnitude of the education system in Canada, the needs of the range of users for whom the statistics are provided in the growing demand for more educational information, noted that education in Canada had become the nation's largest single enterprise in terms of its absorption of human and financial resources. More than 31 per cent of the population, he said, was directly involved in education. In 1968, more than six million students were enrolled in educational institutions, up from 4.6 million in 1961, while teachers at all levels made up a labour force of 350,000, and another 165,000 persons were employed in non-teaching capacities in educational institutions.

Expenditures on education, according to Dr. Wisenthal, were absorbing an ever-increasing share of available financial resources and there were few signs of any marked changes in this trend. Twenty per cent of the tax dollars from all sources by all levels of government in Canada were committed to the support of education. In the 1969-70 fiscal year, this amounted to $6.9 billion, up from $5.9 billion, or eight per cent of the gross national product, in 1968.

Dr. Wisenthal demonstrated the size of the increase in the cost of education by comparing gross national product, total personal income and expenditure on education on the basis of a 1961 = 100 index. The 1968 figures were: gross national product, 182.8; total personal income, 187.6; expenditure on education, 301.9.

The growth and cost of the educational system, however, was not the real problem facing the Education Division at DBS. The challenge was to collect and publish current and timely information in such a changeable field. In the elementary schools, the trend is toward an ungraded system. In high schools, traditional distinctions between academic and vocational courses are disappearing. Community colleges have been established offering a wide range of academic and vocational programs, and the universities have become more complex and more comprehensive, with distinctions between disciplines less clear.

In outlining a user mosaic for educational statistics, Dr. Wisenthal noted that the DBS Education Division serves a disparate community; end uses vary considerably from user to user. As examples, he cited the needs of the Department of Manpower and Immigration for data on students entering the labour force compared with the need of the Department of Secretary of State for data on linguistic ability and other characteristics. To meet such challenges, the Education Division has been completely reorganized and new programs undertaken *(for more details, see New Projects section).*

Dr. Wisenthal outlined several new programs by which the Division expected to meet urgent current needs. Planning was well advanced on the first large indepth survey of community college teaching staffs. Pilot testing of the survey had been completed and the field work would be conducted in academic year 1970-71. Amother new program would provide inventories of available classroom space at all levels of the education system.

The development of educational technology as a possible method of providing equality of educational opportunity throughout the country offered the prospect of another new program. The extended use of educational television, computer-assisted instruction, and other electronic devices designed to facilitate the learning process will require the development of equipment inventories at all levels of schooling to create the data base needed for planning.

The problem of financial statistics on education, said Dr. Wisenthal, was receiving new attention from the Division. There were signs that some uniform type of reporting procedure could be worked out which would make financial statistics uniform and comparable from province to province.

In addition, the need for comprehensive and detailed information as a basis for planning within a province and between provinces had prompted the provincial ministers of education to ask DBS to collaborate with provincial departments to co-ordinate and develop systems of information which would bring together

data on students, staff, facilities and finance in such a way that interrelationships could be studied within a framework of comparable classifications.

Seventh Conference of Commonwealth Statisticians, New Delhi, November 16 to 28, 1970

The first Conference of Commonwealth Statisticians took place in 1920 and recent conferences have been in Wellington, New Zealand in 1960 and in Ottawa in 1966. The most recent Conference was in New Delhi, India, and was attended by twenty-two countries and some forty-five formal participants, with additional participation by officers of Indian central and state statistical offices. The Commonwealth Secretariat was represented and played an important part in reproducing and distributing documents prior to the Conference.

The Canadian delegation consisted of W.E. Duffett, S.A. Goldberg, V.R. Berlinguette and I.P. Fellegi. The Chairman of the Conference, Professor P.C. Mahalanobis, was assisted by a Steering Committee consisting of the Chief Statisticians of Canada, Ghana, India, Jamaica and the United Kingdom. Conference arrangements were handled by the Indian Central Statistical Office.

An agenda, which proved to be somewhat too long, had been prepared in advance, and about 125 papers were contributed, including 14 contributed by Canada. Among the important topics discussed were statistics for economic planning, the role of research in statistical offices, levels of living and regional price levels. Special interest was shown in sessions on confidentiality and the use of computers.

When the Conference was originally established many years ago, it provided a forum for discussions among the larger and older members of the Commonwealth. In recent years, with the development of new states within the Commonwealth, discussions between the older and newer members, and among the newer members themselves, have become very fruitful. The newer countries, many of which have a considerable degree of economic planning and must conserve limited supplies of savings and foreign exchange, have an urgent need to develop good statistical systems. The Dominion Bureau of Statistics maintains close and fairly frequent contact with statistical activities in the U.K. and the Caribbean but these Conferences provide an opportunity to renew contacts with other parts of the Commonwealth.

The fact that there are no linguistic obstacles to communication and that there is a mutual understanding of governmental structures and the roles of public servants assists in the discussion of problems and their solution.

The next Conference is expected to take place in November 1975 in the Carribean area.

DBS Officers Study European Proposals for International Transport Census

G.E. Clarey, Assistant Director, and E.T. Steeves, Chief, Transportation Section, Transportation and Public Utilities Division, Economic Statistics Branch, DBS, were observers at discussions of the Inland Transport Committee of the Economic Commission of Europe. Representatives from 25 European countries and a number of international transport organizations also attended the meeting which was held in Geneva, Switzerland in August 1970.

The three-day meeting covered many aspects of transportation statistics. Of particular interest were descriptions of sample surveys conducted in various countries on goods and passenger transport, and of a 1970 census of traffic on main international traffic arteries. Reports were given on information presently available on movement in inland transport of "large" containers – those 20 feet or more in length. A draft questionnaire for a basic census of transportation was proposed and discussed.

Other topics of continuing interest to the group were: the development of a glossary of transportation terms, definitions of terminology relating to internal waterway craft, the development of indices to measure the volume of transport, and statistics on road traffic accidents.

International Conference on Productivity Statistics

The Working Group on Productivity Statistics of the Conference of European Statisticians had its second session in Geneva, April 6 to 10, 1970. Participants from 14 European countries, Canada, the United States and some international organizations attended. Béla Prigly, Acting Chief of the Productivity Research and Analysis Section, Economic Accounts Branch, DBS, was the Canadian representative.

The Working Group examined in detail the methodology of intercountry comparisons of labour productivity and methods for analyzing factors accounting for differences in levels of productivity, and reviewed recent developments in intertemporal comparisons of labour productivity.

In discussing its work program, the Group made a number of recommendations and suggestions in three specific areas.

1. *Intercountry comparisons of levels of productivity* – It was recommended that the Secretariat be requested to prepare a revised version of a memorandum discussed at the meeting on the methodological problems involved in international comparisons of levels of labour productivity in industry, to be issued in the Statistical Standards and Studies series. The revised version would take into account the Group's comments on the original memorandum and comments to be submitted later by countries.

The Working Group also advised that countries consider undertaking additional bilateral comparisons of labour productivity in industry. The Group noted that Austria, Czechoslovakia, France and Hungary were considering using the results of the bilateral comparisons that they had carried out to make a multilateral comparison among the four countries, and urged that such a study should be given full support.

The Group considered it inadvisable to try to extend intercountry comparisons of levels of productivity to other branches of the economy for the time being on the basis that the difficulties involved were considerably greater than those encountered in making comparisons in industry.

It was suggested that a summary be prepared of the numerical

results of the comparisons already carried out, and that the possibilities of extrapolating the results to a common year be examined. Efforts should also be made to fill in missing links by means of simplified comparisons made on the basis of published data. The Working Group referred this suggestion to the Secretariat for further study.

2. *Factors Accounting for Differences in Labour Productivity* – To promote work in this field, the Group proposed that – countries which have undertaken bilateral comparisons of labour productivity be encouraged to prepare joint studies analyzing the factors accounting for the differences in productivity levels found.

It was suggested that countries which have made studies of the factors affecting changes in labour productivity over time should be urged to submit study reports to the Secretariat for circulation to the members of the Conference, and that countries which have not yet undertaken such studies should be encouraged to do so.

Another proposal was that the Secretariat should be requested to prepare a general paper, summarizing and analyzing the results of the various studies. The Group also suggested that the Conference of European Statisticians consider whether it would be feasible and desirable to draw up international guidelines on the analysis of factors affecting productivity levels.

3. *Measurement of Intertemporal Changes in Productivity* – The Group noted that the question of index numbers of productivity (of labour and other inputs) would be considered in the context of the Conference of European Statisticians' work on statistics and indices of prices and quanta. It therefore considered that no further work on the statistics of intertemporal changes in productivity is required at the international level for the time being.

The Working Group emphasized, however, the importance of extending work on intertemporal comparisons to branches of the economy other than industry, and recommended that the need for improved output measures for these branches, especially the service industries and the government sector, be taken into account by the Working Group on Statistics and Indices of Prices and Quanta in its further work.

On other questions, the Working Group on Productivity Statistics said there was a need for a trilingual list (English, French and Russian) of terms used in productivity statistics. A number are already included in the trilingual list of national accounting terms which is being prepared, but it would be necessary to add other specific productivity terms. In further work on productivity statistics and the analysis of the factors affecting levels of productivity and changes in productivity, a need was seen for further development of basic statistics, notably in statistics on intermediate consumption, input of labour and input of capital.

DBS Officers Discuss Migration, Marriage at Population Association Meeting

A paper on the estimation of net migration among Canadian provinces, using the place-of-birth survival-ratio method, by Dr. M.V. George, Chief, Demographic Analysis and Research Section, Census Division, Socio-Economic Statistics Branch, DBS, and a paper examining the changing age pattern for first marriages in Canada and United States, by Walt Saveland, also of the Census Division, were among the 78 papers presented at the 1970 annual meeting of the Population Association of America in Atlanta, Georgia.

Twenty-three sessions, covering a broad range of subjects, were held during the three-day meeting. Dr. George's paper, "Estimation of Interprovincial Migration for Canada from Place of Birth by Residence Data 1951 - 1961", was presented at the Migration, Fertility and Education Seminar.

The paper described the basic measures of migration from place-of-birth data, the method of estimating intercensal net migration, and the adjustments necessary to compensate for the open nature of the Canadian-born population.

A comparison of the net migration figures estimated by the place-of-birth survival-ratio method (PBSR) with those by the census survival ratio (CSR) and life-table survival ratio (LTSR) methods, showed that the PBSR and the CSR estimates were closer than the CSR and the LTSR estimates. The most striking finding, according to Dr. George, was that net migration curves by age that were obtained from the CSR and the PBSR estimates were smoother than was the curve obtained with LTSR. The comparison also suggested that the net migration estimates by the PBSR method were probably more reliable than those by the other two methods, with estimates by the CSR method the second best. The main difference between the two methods, said Dr. George, was in the different sets of survival ratios used. Provincial survival ratios were used for PBSR, and national census survival ratios, for CSR. Furthermore, whatever the relative accuracy of the estimates by the PBSR method, it provided more data about migration of the native-born population and made it possible to estimate separately for each province: (1) net gains or losses from migration of persons who were born in the same province, and (2) net gains or losses from the migration of persons born elsewhere in the country. It was also possible, by the PBSR method, to obtain detailed data for studying individual intercensal migration streams between provinces.

Mr. Saveland in his paper "Changing Age Patterns at First Marriage: Canada and the United States", listed three general observations on Canadian marriage patterns in the recent past and the near future. The proportions of marriages to brides in the 20 to 24 age group is increasing and the median age of women at first marriage is also rising. Conversely the median age of men at first marriage is decreasing, thereby increasing the proportion of marriages to grooms in the 20 to 24 age group. The net results of these two trends is a converenge of the age at marriage, for both men and women, to the 20 to 24 age group.

The changes in marriage age patterns were accounted for in a number of ways. One, termed the "marriage squeeze", is the surplus of one sex or the other at prime marrying ages at various times, and has the effect of bringing into marriage, people who are not at the prime marrying ages. The surplus of men in the

1950's, for example, resulted in an increasing number of marriages involving unusually young women; but the surplus of women of prime marrying ages in the 1960's resulted in delays in marriage until later ages.

Subtraction of the effects of marriage squeeze from the actual (net) changes left a remainder which might be explained at various points in time by factors such as:

1. Over-response to the marriage squeeze by young women, then men, who find all their friends getting married.
2. Increasing attraction of work, higher education and other alternatives to marrying while young.
3. Increasing availability of extra-marital sexual companionship made possible by effective contraceptives.
4. Shifts in lifetime and place of meeting opportunities for marriageable men and women.
5. Cautious reaction to the decreasing stability of marriages.
6. Normative chaos and redefinition of social relations during the emergence of youth culture.
7. Increasing economic insecurity during a time of severe inflation and government efforts to curb it.

New Report on Income Distributions in Canada

Income Distributions by Size in Canada, 1967, a report prepared by the Consumer Finance Research Section, Socio-Economic Statistics Branch, DBS, was released in early January 1971. This report contains the final edited data from the Survey of Consumer Finances which was conducted in the spring of 1968 on a national sample of private households. The preliminary results of the survey were published in a bulletin *(Income Distribution and Poverty in Canada, 1967, Preliminary Estimates)* in the fall of 1969.

The final report contains approximately the same tables as the report of the last survey *(Income Distributions by Size in Canada, 1965).* Both the 1965 and 1967 reports include data on farm families as well as non-farm families and individuals whereas earlier surveys, going back to 1951, excluded the farm population.

Although the type of tables is similar to those of 1965, much more detail is published for 1967. Because of the larger sample this time, income distributions are available on a provincial basis. For example, average family income in 1967 was estimated to have been:

Newfoundland	$5,494
Prince Edward Island	$4,474
Nova Scotia	$5,989
New Brunswick	$5,922
Quebec	$7,404
Ontario	$8,438
Manitoba	$6,877
Saskatchewan	$6,375
Alberta	$7,289
British Columbia	$7,829
Canada	$7,602

In addition to more geographic detail, data for smaller subgroups of the population is available. The 1967 income distribution information on sex and age of the head of the household, for example, is now given separately for families and for unattached individuals. Individual income data is given separately for males and females. Tables also show the estimated number of units for each group for which income data are being published, rather than the percentage distributions used in the past.

The 1967 income report contains the most detailed income distribution data available until the release of 1971 Census data. The Survey of Consumer Finances taken in the spring of 1970 used a much smaller sample, and income estimates from it will be far less detailed.

A series of special reports, also using data from the 1967 survey, are expected to be published in 1971. At present, seven reports are planned. The tentative titles are:

- Earnings and Work Experience of the 1967 Labour Force
- Low Income Families in Canada, 1967
- An Econometric Study of Incomes of Canadian Families, 1967
- Family Incomes (Census families), 1967
- Comparative Income Distributions, 1965 - 1967
- Household Facilities by Income and Other Characteristics, 1968

• Economic Characteristics of the Population Aged 14 to 25, 1967

Income Distributions by Size in Canada, 1967, catalogue number 13-534, is available from the Publications Distribution Unit, DBS, Ottawa 3. Inquiries about the planned special reports should be directed to Mrs. G. Oja, Chief, Research and Surveys, Consumer Finance Research Division, Socio-Economic Statistics Branch, DBS.

New Report Gives Projections of Student Enrolment to 1981

A new report gives, for the first time, projections of student enrolment and the number of post-secondary graduates by province for years up to 1980-81. The report, *Enrolment in Educational Institutions by Province 1951-52 to 1980-81,* is co-authored by Z.E. Zsigmond, Chief, Projections Section, Education Division, Socio-Economic Statistics Branch, DBS, and C.J. Wenaas, of the Economic Council of Canada. It is an outgrowth of earlier studies by Dr. Zsigmond and Wolfgang M. Illing published as *Enrolment in Schools and Universities, 1951-52 to 1975-76.*

The new report presents information in greater detail than does its predecessor. For example, projections of all post-secondary graduates are given with separate figures for university and non-university institutions. Historical and projected data are also available for nursing (R.N.) diploma courses.

Among the highlights:

1. Full-time, post-secondary enrolment is projected to increase to 1,130,000 by 1980-81 from an estimated 490,000 in 1969-70.
2. The proportion of graduate students in full-time enrolment in universities is expected to rise to almost 15 per cent in 1980 - 81 from about 10 per cent in 1969-70.
3. Females will comprise 42 per cent of the full-time enrolment in post-secondary institutions by 1980-81.
4. Elementary school enrolment (grades 1 to 8) is expected to reach a peak of 4.2 million by 1970-71 and to decline thereafter. Secondary school enrolment (grades 9 and up) is forecast to grow slowly to 1.8 million by 1975-76 and then drop gradually during the latter part of the 1970's. The basis for these expected declines is the drop in the birth rate in the 1960's.

In addition to projections, the volume contains a wealth of DBS-based statistics, some of which have not so far been released elsewhere. The tables in an appendix, for example, show bachelor's and first professional degrees and equivalent diplomas disaggregated by area of specialization and sex of student. Data are presented for Canada and for provinces, for each year from 1951-52 to 1967-68. In another appendix, full-time university enrolment between 1951-52 and 1967-68 is examined in two ways: provincial enrolment is classified by student's place of residence; and students from each province are shown by the province where they are attending university.

Enrolment in Educational Institutions by Province, 1951-52 to 1980-81, By Z.E. Zsigmond and C.J. Wenaas, catalogue number Ec22-1/25, 306 pp., is available from Information Canada, Ottawa and Information Canada bookstores in principal cities. price $3.00.

New OECD Publication Provides Financial Data on 17 Countries

OECD Financial Statistics, a new periodical publication providing detailed and comparable financial information on the United States, Canada, Japan and 14 European countries, was introduced in June 1970. Issued by the Organization for Economic Co-operation and Development, it is the result of efforts of the OECD Ad Hoc Group of Financial Statisticians to perfect financial statistics and improve their international availability.

Participants in the development of the publication included E.B. Carty, Director General of the Economic Accounts Branch, DBS, who was, for a period, Group Chairman; F.W. Emmerson, Co-ordinator, Financial Statistics Branch, DBS; J.D. Randall, Director, Balance of Payments and Financial Flows Division, Economic Accounts Branch, DBS; and G.R. Post, G.G. Thiessen and J.E. Conder, of the Research Department of the Bank of Canada.

Some of the main subjects dealt with in the report are: the main uses and sources of the capital that feeds the economies of OECD countries; the rates of interest which apply to significant financial instruments in each OECD country; the total of new security issues on domestic financial markets and on the Euro-Market; the make-up of security portfolios of the various categories of financial institutions, governments and other classes of investors; and transactions carried out on security markets.

The data, which so far have either been unobtainable or obtainable only with difficulty, are integrated in a system of correlated tables using definitions agreed upon in the United Nations System of National Accounts.

The section applicable to Canada contains the following tabular information in addition to definitions, explanations and sources of data.

Simplified Tables of Capital Operations and Financial Transactions, annually for 1964, 1967 and 1968 (Table 1.A/04).

Lending and Borrowing Rates, quarterly 1960 to 1970 (Table 1.B/04)

Supply and Demand of Capital of the Security Market, annually 1964 and 1966 to 1968 (Table 1.C1/04)

Value of Outstanding Securities, End of 1964 and 1968 (Table 1.C2/04)

Securities Issues, annually 1960 to 1968 (Table 1.C3/04)

In addition to tables and notes on each of the 17 countries, the report includes data on the market for international security issues, and internationally comparable tables expressed in United States dollars or as a percentage of Gross National Product.

OECD Financial Statistics will appear twice annually and updating supplements will be published every two months. Canada will be making regular contributions to the program. Future work of the Ad Hoc Group of Financial Statisticians will include the publication of tables covering the financing of federal governments and business, and improvements in the quality and comparability of the data.

Subscriptions to OECD Financial Statistics are available through Information Canada, Ottawa. Annual subscription rate: $26.

Labour Statistics Guide Gives Source Details for 140 Series

The first official directory of the many labour statistics available from Federal Government departments, *Guide to Federal Government Labour Statistics, 1969,* was published in 1970 by the Labour Division, Economic Statistics Branch, DBS.

The guide brings together the considerable sources of data available concerning employment, unemployment, earnings, hours of work, employee benefits and other data relating to the Canadian labour force such as productivity, taxation, contributions to Canada and Quebec pension plans. It enumerates and describes surveys and sources of administrative data available from DBS, the Department of Labour, the Department of Manpower and Immigration and other Federal Government departments, including labour data obtained as by-products of non-labour surveys such as the DBS annual Census of Manufactures.

For certain sources, such as the decennial census, the DBS monthly Labour Force Survey and monthly survey of Employment, Payrolls and Man-Hours, general descriptions are given of the types of unpublished data available on request.

The guide also provides historical origin information for all sources and an historical series chapter for three important labour statistic sources.

With a comprehensive coverage of some 140 different publications and reports and an explanation of survey frequency, coverage and concepts, it is hoped that the guide will contribute to the continuing attempt to integrate and co-ordinate federal government labour statistics. A particular aim is to reduce survey response burdens in the labour field by encouraging users who may also be collectors of such data to review all available surveys before initiating new surveys.

The guide features an extensive table indicating which statistical series carry information on each of eight separate general topics so that all sources which might be helpful in meeting a particular need can be readily identified. Useful notes on DBS classifications of companies, establishments and industries, and on occupational data classification are contained in appendices.

Separate English and French editions are available.

Guide to Federal Government Labour Statistics, 1969, catalogue number 72-509, English and 72-509F, French, is available for $1.00 from the Publications Distribution Unit, DBS, Ottawa 3.

Canadian Nurses Association Yearbook is Expanded in Third Edition

The Canadian Nurses Association recently published, for the third successive year, its comprehensive but compact statistical yearbook on the nursing profession in Canada.

Countdown 1969: Canadian Nursing Statistics presents data, some from DBS, in five chapters, under nine main headings, with text covering highlights and trends. Inventory, distribution and turnover in institutions, training, education, licensure, economic status and data on auxiliary personnel are the main subjects covered.

Additions to previous coverage include more definitive data for initial and post-basic training programs and information on the salaries of nurses in public tuberculosis sanatoria and public mental hospitals and of nursing assistants in public institutions.

Format and content permit a large degree of comparability with data in the American Nurses Association publication, *Facts About Nursing.*

Countdown 1969: Canadian Nursing Statistics, 161 pp. $4.50 may be obtained the Canadian Nurses Association, 50 The Driveway, Ottawa 4. Inquiries should be directed to Sister Mary Felicitas, President, at that address.

First Full Report on Post-Secondary Student Population in Canada

The first report on expenditures, income and other socio-economic features of the entire post-secondary student population in Canada has been published by the Education Division, Socio-Economic Statistics Branch of DBS.

The report, *Post-Secondary Student Population Survey, 1968-69,* presents 25 tables of comprehensive data covering the universities, CEGEP's, junior colleges, institutes of technology, teachers colleges, écoles normales and other vocational schools that are clearly post-secondary. Previous reports of this kind have been limited to university students.

The project was undertaken by DBS Education Division at the request of the federal Department of Finance on behalf of a committee of student aid officials drawn from all provincial governments and from the Education Branch of the Department of Secretary of State.

Space limitations made it necessary to exclude from the publication some of the data collected. However, some supplementary tables are available from the Education Division at nominal cost.

Post-Secondary Student Population Survey, 1968-69, catalogue number 81-543, is available from the Publications Distribution Unit of DBS for $1.50.

Origin and Destination Data on Domestic and Canada-U.S. Air Travel

Origin and destination data on commercial passenger flights within Canada and between points in Canada and United States are now available in two new reports prepared by the DBS Transportation and Public Utilities Division. The reports, *Air Passenger Origin and Destination, 1969, Domestic Report* and *Air Passenger Origin and Destination 1969, Canada-United States Report,* are intended to provide indications of trends in air transportation and to supply the information necessary for the assessment of needs for new or expanded transportation facilities.

Data for these publications are provided by Canadian carriers for flights originating in Canada. Six Canadian scheduled carriers – Air Canada, CP Air, Eastern Provincial Airways, Pacific Western Airlines, Quebec Air and Transair – and two non-scheduled carriers – Nordair and Norcanair – participate in the

survey. For flights originating in the United States, the data is supplied by the Civil Aeronautics Board, a U.S. governmental agency, under terms of an international exchange agreement. (All certified air carriers in the U.S., except intra-Alaska carriers, report origin and destination statistics to the CAB). Helicopter operations are not reported on in this program.

The domestic report presents statistics in two parts: Part 1 deals with origin and destination of domestic or intra-Canada traffic; Part 2 is concerned with the volume passenger traffic originating at Canadian cities, regardless of the ultimate destination.

The Canada-United States report is based on data from both Canadian and U.S. airline passenger origin and destination surveys. The surveys investigate itineraries which have both a U.S. point and a Canadian point or which involve a U.S. carrier to a Canadian point or a Canadian carrier to a U.S. point.

The sampling method for both the domestic and transborder reports used the numbers on the passenger coupons. For the two large Canadian carriers – Air Canada and CP Air – a continuous systematic 10 per cent sample is selected by choosing the coupons with numbers ending in zero. A 20 per cent sample of the remaining carriers is achieved by selecting coupons with numbers ending in "5". To avoid duplication, carriers are instructed to report only if they are the first participating carrier to lift a coupon.

Air Passenger Origin and Destination, 1969, Domestic Report, catalogue number 51-204, and Air Passenger Origin and Destination, 1969, Canada-United States Report, catalogue number 51-205 are available from the Publications Distribution Unit, DBS, Ottawa 3.

Nursery Trades Survey Expanded

The results of a revised survey of the nursery trades industry were published in a report, *Survey of Canadian Nursery Trades Industry, 1969,* in December 1970. The survey, formerly published under the title *Shipment of Fruit and Ornamental Nursery Stock,* was conducted by the Crops Section, Agriculture Division, Socio-Economic Statistics Branch, DBS.

The questionnaires used for the survey were compiled in consultation with the Canadian Nursery Trades Association and were sent to all known nursery tradesmen, including operators of garden centres and snow removal firms, and landscapers.

Information was collected on the number of years in business, type of business, membership in the Canadian Nursery Trades Association, number of employees, wages, land investments and other financial and operational data.

In addition to the tabular presentation of the compiled data, there is some analysis of the survey results in an appendix to the report. Although such analysis is limited by the scope and accuracy of the survey, and the replies to it, it is hoped that this section will increase the usefulness of the report.

Survey of Canadian Nursery Trades Industry, 1969, catalogue number 22-203, is available for $.50 from the Publications Distribution Unit, DBS, Ottawa 3.

DBS Officer Elected President of Ottawa Chapter of American Statistical Association

Michael J. Issa, Statistical Output Planning Officer in the Central Planning and Programming Staff of DBS, is the 1970-71 president of the Ottawa chapter of the American Statistical Association (ASA). The Association is designed to provide a forum for the discussion of new ideas and methods in the field of statistics and related disciplines.

The Ottawa chapter is one of the three Canadian chapters of the ASA. During Mr. Issa's presidency, the Ottawa chapter initiated regular monthly meetings at which invited guests present papers of interest to statisticians. Speakers at recent meetings included Dr. J.B. Garner of the Department of Criminology, University of Ottawa, Dr. I.P. Fellegi, Director General of the Methodology and Systems Branch, DBS, and Dr. D. Dawson of the Mathematics Department, Carleton University. At the April meeting, Dr. Arthur Smith, Chairman of the Economic Council of Canada, will speak on the possible introduction of the metric system in Canada.

In keeping with the view that a viable membership is the most important consideration for effective operation, the Ottawa chapter of the ASA is participating in the planning of the "First Canadian Conference in Applied Statistics" to be held in Montreal, May 31 to June 2, 1971. The proceedings of this conference will be published.

Mr. Issa hopes that this conference and the publications from it will not only promote the exchange of ideas and experiences, but will also contribute to the standards and status of Canadian statisticians, and that perhaps the conference may even form the first step toward a Canadian statistical association.

Readers interested in the American Statistical Association are invited to contact Mr. M.J. Issa, Central Planning and Programming Staff, Integration and Development Staffs, DBS, Ottawa 3.

New Personnel in the Statistics Use Development Section

The Statistics Use Development Section of the DBS Statistics Use and Information Services Group has four new staff members. **A. Billingsley** joined the Section as a Statistics Use Development Officer at the Ottawa headquarters. Mr. Billingsley previously worked in Market Research and Corporate Planning for Chemcell Ltd., Montreal. Also working in the Ottawa office is **C. Nichol**, a research assistant for the Section. Mr. Nichol came to DBS from the Financial Analysis and Planning Department of Ontario Hydro, Toronto.

A. Poirier and **R. Cinq-Mars** are the two new Regional Statistics Use Development Officers. Mr. Poirier, formerly with the Chromium Mining and Smelting Company, is located in Montreal. Mr. Cinq-Mars is located in the Winnipeg office. Before becoming a Statistics Use Development Officer, Mr. Cinq-Mars was Chief of the Livestock Section, Census Division, DBS.

The purpose of the Statistics Use Development Section is to help users of DBS statistics to make better and more extensive use of existing statistics and to inform users of the new services

and publications available from DBS. The Section also provides "feedback" from users to DBS subject matter specialists about the users' problems and requirements.

The Statistics Use Development Officers work with all types of users – industry, municipal and provincial governments, universities and other organizations and institutions involved in socio-economic research. Interpretation of DBS statistics, explanation of the terms, concepts and methodology used by DBS, and guidance on access to unpublished data are some of the services provided to users by the Statistics Use Development Officers, in co-operation with subject matter divisions.

The location of these Officers in the large cities across Canada brings DBS services closer to the final users. At present, there are Statistics Use Development offices in Montreal, Toronto, Winnipeg and Vancouver, as well as the headquarters in Ottawa.

Provincial Liaison Appointments

N.G. Campbell and **A.T.S. Collier** have joined the Provincial Liaison and Consultative Services Staff, Socio-Economic Statistics Branch, DBS, as Regional Provincial Liaison Officers. Mr. Campbell was previously an economist with the Nova Scotia Department of Trade and Industry. In his new position, he will be responsible for liaison with the provinces of Nova Scotia, New Brunswick and Prince Edward Island. Mr. Collier, a former industrial and tourism development representative in Los Angeles, California, for the Government of Alberta, will be the liaison officer for the provinces of Alberta and British Columbia.

The duties of these new liaison officers will include informing provincial officials of DBS developments and informing DBS of provincial statistical developments. In addition, the liaison service promotes and assists in co-operative arrangements between the provinces and DBS for the collection and analysis of statistics.

Director Retires

Neil L. McKellar, Director of Central Classification and Company Establishment Integration of the Integration and Development Staffs, for the past 15 years, has retired. Chief of the Unemployment Insurance Statistics Section and Assistant Director of the Labour and Prices Division are two of the positions he has held since he joined DBS in 1942. Mr. McKellar's work in the Bureau has brought him in contact with many international organizations including United Nations statistical organizations, the International Labour Organization and the OECD.

In April 1971, Mr. McKellar will begin an assignment for the United Nations Educational, Scientific and Cultural Organization (UNESCO) in Paris. His task will be to develop a standard education classification.

Appointments

H.L. Allen, Assistant Dominion Statistician, Finance and Administration, has assumed a new role as Assistant Dominion Statistician, General Assignments.

Miss A. Ansmits has been appointed Chief, Industrial Output Section, National Output and Productivity Division, Economic Accounts Branch, DBS, replacing **G.J. Garston** who became Director of this recently established Division.

R.L. Borden, Assistant Director, Prices Division, Economic Statistics Branch, has left the Bureau to accept the position of Assistant Director, Resource Programs Division (Non-renewable Resources) in the Department of Finance.

R.H. Bradley, Chief of the Retail Prices Section, Prices Division, has been appointed Chief of the Comparative Living Costs Section, Prices Division. Mr. Bradley, who came to the Division from the Aviation Statistics Centre, Transportation and Public Utilities Division, will replace Y.P. Fortin who has left the Bureau for a position in the Post Office Department.

J.C. Brearley has retired as Chief, Quinquennial Census Section, Merchandising and Services Division, Economic Statistics Branch, DBS. Mr. Brearley joined the Bureau in 1931 and has served in various capacities in the Merchandising and Services Division since 1943.

Miss E.L. Buckley has been named Sector Head, Deflation, National Income and Expenditure Division, Economic Accounts Branch, DBS.

D. Buxton, formerly Head, Capital Flows Sector, Balance of Payments and Financial Flows Division, Economic Accounts Branch, moved to the Financial Statistics Branch, where he is Chief, Planning and Analysis Section, Corporation and Labour Returns Act Administration.

E.P. Cannon has been appointed Chief, Integration and Response Analysis, Merchandising and Services Division, DBS. Mr. Cannon comes to this position from Central Classification and Company Establishment Integration of the Integration and Development Staffs.

G.E. Clarey has been named Assistant Director of the Transportation and Public Utilities Division, Economic Statistics Branch, DBS. In addition to his new duties, Mr. Clarey will continue as Chief of the Division's Aviation Statistics Centre.

D.J. Collins, formerly of the Business Finance Division, Financial Statistics Branch, was appointed Sector Head, Capital Accounts Sector, Balance of Payments and Financial Flows Division, Economic Accounts Branch.

R. Collins, after serving in various positions with the Financial Statistics Branch, has been appointed Head of the Real Output Measures Unit, National Output and Productivity Division, Economic Accounts Branch. Mr. Collins came to the Bureau in 1967 from the Royal Commission on Taxation

F. Curry has been named Director of Central Classification and Company Establishment Integration, Integration and Development Staffs. Prior to this appointment, Mr. Curry was Assistant Director, Labour Division, Economic Statistics Branch.

E.S. Eaton has been appointed Chief of the Livestock Section, Agriculture Sub-division Census Division, Socio-Economic

Statistics Branch. Before joining DBS, Mr. Eaton was with the Economics Branch and the Production and Marketing Branch of the Canada Department of Agriculture, where he also served for five years as Secretary of the Canadian Agricultural Outlook Conference.

Dr. I.P. Fellegi has been appointed Director General of the new Methodology and Systems Branch. Dr. Fellegi has served in the Bureau for 14 years. At the time of this appointment, he was Director of the Sampling and Survey Research Staff.

E.A.La S. Fisher has been appointed Co-ordinator of Systems and Development, Education Division, Socio-Economic Statistics Branch. Mr. Fisher previously carried out educational research in the Education Support Branch, Department of the Secretary of State.

M.E. Francino is the new Chief of the Regional Research Section, Regional and Manpower Research Staff of the Integration and Development Staffs. Mr. Francino joined DBS in 1967 and, up to the time of his new appointment, was Senior Regional Analyst of the Regional Staff.

H.C. O'Haver has been appointed Director of the Field Division, Socio-Economic Statistics Branch. Mr. O'Haver came to DBS as Acting Director of the Special Surveys Division (now called the Field Division), from his position as Chief of the Decennial Census Operations Branch of the United States Bureau of the Census.

D. Khosla, former Assistant Professor of Economics at Queen's University, has been named Chief of the Methods and Systems Section, Econometric Research, Integration and Development Staffs, DBS.

W.P. Lennon is the new Chief of the Publication Services Section of the Statistics Use and Information Services Group, DBS. His responsibilities include supervision of such publications as the *Statistical Observer, DBS Daily,* and *DBS Weekly.* Mr. Lennon also acts as Secretary of the DBS Publications Advisory Board. Before joining DBS, Mr. Lennon held a management position in Marketing with a large electrical manufacturer.

A. Loanemae has joined the staff of the Manufacturing and Primary Industries Division, DBS as a liaison officer for the forest industries of British Columbia. Mr. Loanemae comes to the Bureau from Crown Zellerbach Canada Ltd., where he was Manager of Market Research. He will be stationed in the DBS regional office in Vancouver.

J. MacKinnon, formerly Chief of the Economic Planning Division and Co-ordinator of Economic Planning at Canada Emergency Measures Organization, has been appointed Chief of the Food, Beverages and Textiles Section, Manufacturing and Primary Industries Division, Economic Statistics Branch, DBS.

W. Mackness, formerly of the Economic Analysis Branch, Department of Finance, has been named Chief, Financial Flows Section, Balance of Payments and Financial Flows Division, Economic Accounts Branch, DBS.

J.-E. Menton has been appointed Field Co-ordinator (Prices), Prices Division, Economic Statistics Branch, DBS. Mr. Menton moved up to his present position from a commodity officer position in the Retail Prices Section of the Prices Division.

W.I. Moore, Director of the Field Division, Socio-Economic Statistics Branch, has retired after 25 years service with the Bureau. Prior to his appointment as Director in 1958, Mr. Moore was Director of Mechanical Tabulations Divisions. He served with the RCAF before joining DBS in 1945.

W.A. Nesbitt, Acting Director of the Field Division retired in August 1970. Mr. Nesbitt joined the Bureau in 1931 and served for many years as Chief of the Processing and Analysis Section, and more recently, as Assistant Director of the Field Division.

I.H.D. Penpraze has been appointed Chief, Retail Prices Section, Prices Division, DBS. Prior to this appointment, Mr. Penpraze served in the International Prices Section of the Division.

D.B. Petrie has been named Executive Assistant to the Dominion Statistician. Mr. Petrie joined the Bureau in 1964 and since 1967, was Chief of the National Wealth and Capital Stock Section of the Business Finance Division.

B. Prigly has been appointed Chief of the Productivity Research and Analysis Section, National Output and Productivity Division, Economic Accounts Branch. Mr. Prigly has been acting in this capacity for some time as well as carrying out his former responsibilities as Head of the Aggregate Productivity Measures Unit.

R.B. Proud has been appointed Chief of the newly formed Farm Income and Prices Section, Agriculture Division, Socio-Economic Statistics Branch. Mr. Proud had been Head of the Farm Finance Unit of the now replaced Farm Finance Section.

W.M. Roberts has been recently appointed Chief of Facilities Information Section, Education Division. Mr. Roberts came to DBS from the Metropolitan Toronto School Board where he was a research officer.

D.H. Sheppard, former Supervisor of Market Research with the Alberta Bureau of Statistics, has been appointed Senior Economist with the newly created Economic Research Branch, Alberta Department of Industry and Tourism.

J.B. Thwaites and **J. Dever** have been appointed to the staff of the Central Classification and Company Establishment Integration Staff, DBS. Prior to his appointment, Mr. Thwaites was Economic Development Co-ordinator for the British Columbia Telephone Company. Mr. Dever was formerly comptroller of Bowmar Canada Ltd.

T.S. Tuschak, formerly Section Chief, Financial Flows Section of the Balance of Payments and Financial Flows Division, has been appointed to Financial Operations in the Department of Finance.

M.W. Valiquette has been appointed Section Chief, International Travel Statistics, Balance of Payments and Financial Flows Divi-

sion, Economic Accounts Branch. Mr. Valiquette has been Acting Chief since the death of Mr. Lloyd Ramesbottom in December 1970.

S. Wells has been named Director of Econometric Research, Integration and Development Staffs, DBS. Mr. Wells was an economist with the Prices and Incomes Commission prior to this appointment.

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STATISTICAL OBSERVER

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STATISTICAL OBSERVER

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The Statistical Observer is a publication designed to contribute toward informing economists, statisticians and related professionals throughout Canada about selected statistical and research developments undertaken in DBS, in other federal departments and agencies, in provincial departments, in universities and in business and independent research organizations.
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The 1971 Census Data Access Program

The Census Division of the DBS Socio-Economic Statistics Branch is developing a comprehensive program for the dissemination of the data gathered in the 1971 Census. This program, called the Census Data Access Program (CDAP), is designed to satisfy a large volume of requests for data in several forms.

The CDAP may be divided into three interrelated components: 1) the data available, in its many forms; 2) the documentation needed to identify and obtain the data; and 3) the data management system.

The Data and the Media of Dissemination

The data collected from the 1971 Census questionnaires will be available to users already aggregated for various groups and areas. In addition to these standard data, users may request "special" data – classified into other categories, cross-classified with different variables or aggregated for non-standard areas. The CDAP is designed to facilitate users' access to both the standard and special data.

One aspect of the CDAP that will allow users to obtain data grouped on the basis of non-standard areas (one kind of special data) is the use of the GRDSR system. GRDSR – Geographically Referenced Data Storage and Retrieval – consists of a set of data processing operations (using a technique called geocoding and a software package, STATPAK) and the storage and retrieval of corresponding data on randomly accessible storage devices. Using this system, any combination of census data can be retrieved and tabulated for any user-specified area, provided that the confidentiality constraints of the Statistics Act are not violated. (More information about GRDSR is available in the *Statistical Observer*, Volume 2, Number 1, June 1969.)

Another aspect of geographically-based retrieval of Census data is the use of a software package called SYMAP. With SYMAP, information can be taken from a tabulation or series of tabulations and reproduced in map form. This technique is especially useful for showing density of population in certain areas.

These are examples of retrieval of only one kind of special data. Although the increased scope and number of user summary tapes planned for the dissemination of 1971 Census data will increase the amount of detailed information being offered as standard data, it is still expected that there will be many requests for special data.

Information gathered in the 1971 Census will be available to users in three media – hard copy (publications and computer prints-outs), microform and computer tapes (called user summary tapes). Both standard and special data will be offered in one or all of these forms.

One important mechanism of Census data dissemination is the exchange of information and views between DBS and data users. For this purpose, there will be a series of workshops held across Canada to inform provincial governments, universities, industry and other data users about existing data, its uses – particularly the potential use of data in machine-readable form – and user services.

Documentation

Because of the vast quantities of information that the Census will provide, users must have some way of identifying and specifying which parts of the information they need. The comprehensive documentation of all Census data makes this possible.

All the documentation is linked by a system of statistical methodology developed by Y. de Jocas, Special Advisor to the CDAP. This system rests on the fact that four basic types of terms may be used to convey any statistical information. Any applied statistical information, whether in the form of a table or a data cell, is composed of these four terms which make up the descriptors of the information. The four terms are called, P, V, S, T, and are defined as follows:

- *Population (P)* or "field of information" terms identify the statistical population to which the data belong. An example of a P term is "labour force".
- *Variable (V)* terms define information within a field. For example, age and sex would be V terms within the labour force "field of information".

  There are two types of V terms – V(Q) terms and V(R) terms. V(Q) terms relate to the information collected at the initial stage, and V(R) terms are the responses to the V(Q) terms. For example, "age" and "sex" are V(Q) terms and "20" and "female" are V(R) terms.
- *Space (S)* terms define the area to which the P and V terms relate.
- *Time (T)* terms specify the time to which the P and V terms apply. For the 1971 Census, the time factor is constant, but the P, V and S terms may vary; therefore, the operational definition of each of the P, V and S terms includes a reference to the time (T) term to which it relates.

Although all applied statistical information is, by definition, a particular combination of P, V, S and T terms, these factors may have been generated at various stages of the statistical operation. The stages at which terms are generated are referred to as the "order" of the term. There are three such "orders" identified for 1971 Census data.

First Order Terms are those that appear initially at the collection stage; therefore, the questionnaire determines the number of first order terms. For the 1971 Census, there are 285 first order terms. All possible census information is related to or generated from a first order term.

Second Order Terms are generated from first order terms at either the editing or tabulation stage. An example of a second order term is "family". This term does not appear on the Census questionnaire but is generated at the tabulation stage from the "relationship to head of household" information. Second order terms always presuppose reference to a first order term, and their number is unlimited. (However, the first issue of the Census Data

Dictionary, which will be available in October of 1971, will contain only those second order terms for which tabulations were designed before June 1, 1971. Terms which may arise later will be included in revised editions of the Dictionary. Users may, of course, generate additional second order terms in their work with Census data.)

Third Order Terms are those derived from first or second order terms by mathematical or statistical operations. Examples of third order terms are percentages, ratios, averages, etc.

Data Descriptors and Codes

These four factors (P,V,S,T) can be called data descriptors because they can fully describe any statistical table or data cell. Therefore, to obtain specific Census data, a user can identify the tabulations required with the data descriptors. Two distinct code systems are used for the data, one for P and V terms, and one for S terms. P terms have 3-digit codes, with each major field of information assigned a separate block of numbers. Since V terms exist only in relation to P terms, V terms are coded by adding a second series of digits to the P term code to which the V term relates. Codes for S terms are designed to take into account the level of spatial breakdown. Four such levels are recognized for Census data: 1) provincial, 2) intraprovincial and intermunicipal, 3) municipal and 4) intramunicipal. Within each level, a distinction is made between those units delineated by administrative corporations and those delineated expressly for Census purposes.

All Census concepts can be identified, indexed (coded) and defined using this methodology as a basis. The two basic documents designed to do this are the Census Data Dictionary and the Census Data Directory.

Census Data Dictionary

The Dictionary will supply 1971 operational definitions of Census concepts and a comparison with the corresponding definitions used in the 1966 and 1961 Censuses. There will be two parts to the Dictionary: the first part is an alphabetical listing of all census terms (with a coded reference number), an indication of the type and order of term, the Census year in which the term was used and the sampling ratio that applied in each case. Included also are cross-references, known synonyms and equivalents, and any other terms that are part of an operational definition. Part II contains the actual operational definition of each term, listed in numerical order of their codes, which closely parallel the major fields of census information. Each such field of information makes up one section of Part II, beginning with a general methodological note describing the main features of the field.

The Dictionary can have a number of uses. Parts I and II form a basic search document. Users could consult Part I to determine if a specific concept has been included in the 1961, 1966 and 1971 Censuses and then find the definition of this concept in Part II. Part II also provides a general reference document for the 1961, 1966 and 1971 Censuses. In addition, the dictionary may serve as a code manual, for both data access and data management, because of the unique code system to identify data descriptors.

The existence of a term in either part of the dictionary indicates that some information does exist on that particular subject, but the dictionary gives no indication of the extent or nature of this information. To find this, users would consult the classification manuals.

Census data classification manuals are an extension of the Dictionary and will give, for V and S terms, the various breakdowns used in the Census Data Tabulation Program. The manuals are structured to provide an alphabetical listing of all these terms and a numerical listing by their code numbers. The specific breakdowns used are coded by appending two additional digits to the V(R) or S terms. The V(R) and S breakdowns will also be listed in the classification manuals.

Census Data Directory

The Directory is an index of all Census data tabulations by Census data descriptors (P-V-S-T). The medium of dissemination of the information and where it may be obtained will also be listed in the Directory.

The Directory may be produced in various sections – indexed either according to P terms (P-V-S-T, that is, by field of information) or by S terms (S-P-V-T, providing a numerical sequencing indexed geographically). It can also be segmented to cover specialized fields of interest or specific media of dissemination, and will be available in either microform, when the full Directory is required, or in hard copy, for a limited part of the Directory.

There will be two interrelated forms of documentation for summary tapes. One provides an index of summary tapes contents for use by the subject-matter specialist and the other, a table indicating tape layout for use in retrievals by the computer specialist. This documentation is also included in the Directory.

A microfilm file of tabulations will be established to alleviate storage problems and to provide an economical method of rapid retrieval. Part of the documentation project will be a list of the data available on microfilm and the codes needed to describe specific data.

Data Management

An important part of the Census Data Access Program, especially from the DBS point of view, is a data management project for the purpose of recording and analyzing user requests. The information to be collected in this project is: who is requesting the Census data; what is requested; and how the request is handled, in terms of medium of dissemination, method of retrieval and time and cost involved. The results of this analysis can be used to help plan more effective dissemination programs in the future.

This comprehensive data access program is only one step in the dissemination of information gathered in the Census. Subject-matter divisions within DBS will publish studies based on Census information. Other federal departments and agencies will use Census information in developing policies and programs.

Provincial governments, universities, businesses and independent researchers will also use Census data in their research and some of their work will also be published. However, before any of these organizations can use the data, they must be able to obtain it, quickly and in the required form. This primary dissemination is the role of the Data Access Program.

More information about the Census Data Access Program may be obtained from Mr. B.J. Giles, Manager, Census Data Access Program and Dr. E.M. Murphy, Chief, Data Dissemination Section, Census Division, Socio-Economic Statistics Branch, DBS, Ottawa.

Canadian Travel Survey

It is estimated that Canadians will spend one billion dollars on travel and associated expenses in 1971. Where this money is being spent and for what purposes are some of the questions to which answers are being sought in the Canadian Travel Survey. This survey is sponsored by the Office of Tourism, Department of Industry, Trade and Commerce. It was designed by the Travel Surveys Section of the DBS Methodology and Systems Branch, and the field work is being conducted by the DBS Field Division. The purpose of the survey is to provide factual up-to-date information, in order to plan new travel and tourist facilities and to evaluate existing facilities.

There is information available about the travel patterns of visitors to Canada, but there is a serious lack of data on the travel habits of Canadians within their own country. This survey is the first step in filling this gap. During 1971, 12,500 Canadians from all across the country will be interviewed in this survey. At the end of each quarter, these respondents will be asked a series of questions about their trips of 100 miles or more. (Some provinces have sponsored an extension in the definition to include trips of 25 miles or more.) The questions include: beginning date of trip, number of nights spent away from home and the type and cost of accommodation used, destination, number of household members on the trip, purpose of trip, mode and cost of transportation, stopovers, meals, activities during the trip and total expenses.

Because of the great volume of data generated from these questionnaires, the survey was designed for fast and efficient processing by the DBS computer. The results will be about 600 tables of new information on all aspects of travel by Canadians. This bank of basic information will be useful to many people and organizations for many purposes. Transportation companies can use these data to analyze their route structures, terminals and equipment; provincial governments, for the re-evaluation of construction plans for highways, parks and recreation areas; tourist bureaus, for the assessment of existing recreation and camping areas, motels, and other facilities used by tourists, and for planning future developments; tourist accommodation and food service industries, for the study of investment prospects and seasonal travel patterns by regions; and regulatory agencies of government, for evaluation of services provided by transportation companies.

It is anticipated that a full report and analysis of the information from this survey will be published by the Office of Tourism late in 1972.

Input-Output Research and Development

The input-output tables for Canada, 1961 have been fully reconciled with the National Income and Expenditure Accounts and the Indexes of Real Domestic Product by Industry. As well, they have been expanded in the area of final demand. Approximately 130 categories of final demand have been distinguished: these include consumer expenditures by category of expenditure, government expenditures on health, education, defense and other

current expenditures by level of government, and capital expenditures on machinery and equipment and structures by approximately 40 industrial sectors and government. These revised and expanded input-output tables are now available in machine-readable and printout form, and will be published in the coming year.

In the fiscal year 1969-70, a project for the annual updating of the Canadian input-output tables was initiated. The project involves the construction of input-output tables for the years 1962 to 1967 in both current and constant (1961) dollars. Tables for subsequent years will be constructed as data become available. The procedures for the annual updating are extensively automated and are designed so that as much new data as possible can be incorporated.

The target date for the completion of the current dollar series is the end of 1971. Detailed publication plans have not been made at this time.

Plans are being made for the construction of input-output tables for Canada, 1971. These tables will be "base-year" in the sense that new classifications of both industries and commodities will be employed.

The DBS Input-Output Staff has constructed input-output tables for the four Atlantic provinces, 1965. These tables will be incorporated in a publication which is being prepared by Professor Kari Levitt of McGill University. This publication will include a discussion of the accounting methodology as well as some analytic models based upon the tables. At this time, there are no plans for the construction of Atlantic Provinces tables subsequent to 1965.

The Input-Output Staff is engaged in a wide range of activities associated with analysis and the provision of customer services. These activities are a natural extension of the activities associated with the construction of input-output tables in that the expertise and information accumulated in the construction activities is disseminated to researchers who require input-output data or analysis. Of course, there is also an important feed-back from the analytical activities to the construction of input-output tables.

Two general purpose models based upon the most detailed input-output tables have been constructed and made operational by the DBS Input-Output Staff – an output determination model and a price determination model. At the present time, these models are of the fixed coefficient variety based upon 1961 data. Subsequent versions of these models will incorporate more recent data and improved methodology. These models are general-purpose in the sense that they are designed to satisfy the requirements of a variety of users. Typically, these models are useful for impact analysis; for example, to study the effect of a final demand or a change in final demand on industry activity levels, labour income, imports, etc., or to study the effect of a change in wage rates or import prices on industrial prices. Although the data base of the models is to a large extent confidential, in most cases the results of calculations based upon them are not. The operation of these models makes available results which could not be duplicated outside of DBS and, at the same time, achieves economies of scale in computer programming.

New methodology is being designed for incorporation in the general purpose models. This includes methodology for making the coefficients of an input-output model vary with activity levels in the model and certain exogenous variables, for regionalization of a national input-output model, and for the simultaneous solution of interdependent price and output determination models.

Operation of the general purpose models, the provision of data in machine-readable form, and other customer service work are provided by the Input-Output Staff on a cost-recovery basis.

Inquiries should be directed to Mr. R.B. Hoffman, Input-Output Research and Development Staff, Economic Statistics Branch, DBS, Ottawa.

An Econometric Model for the Ontario Economy

Although there are several statistical models available for the Canadian economy, few attempts have been made to construct models for regional economies because of the lack of adequate statistical data. However, in 1968, the Economic Analysis Branch of the Ontario Department of Economic Affairs initiated an econometric research program to provide an integrated system of analytical tools for medium- and long-term forecasting and for the evaluation of alternative economic policies. The first two parts of this research program, an input-output table for Ontario's economy and a set of provincial economic accounts, provided the data base for the next project, an econometric model for Ontario's economy.

This model is described in detail in the *Ontario Economic Review,* Special Supplement, March 1971. The first part of the report outlines the basic concepts and methodology of econometric model building. Part II reviews six econometric models designed for regional economies in the United States and Canada during the past 15 years. Part III deals with the specifications of the Ontario model and outlines the methodology adopted in designing the model, and its major characteristics. The final chapter presents the parameter estimates and evaluates the statistical and predictive properties of the equation system.

Policy makers can use the model to evaluate policies relating to a proposed change in any of the variables by tracing the changes in all parts of the model that result from that change in one variable.

For use in forecasting, the model can be reduced to a smaller size to give greater flexibility in meeting the requirements of a specific analysis. A collapsed version of the model, aimed specifically at forecasting, is currently under development in the Economic Analysis Branch and will appear in a future issue of the *Ontario Economic Review.*

Copies of the Special Supplement and subscriptions to the Ontario Economic Review may be obtained, free of charge, from the Economic Analysis Branch, Economic and Statistical Services Division, Ontario Department of Treasury and Economics, Frost Building, Queen's Park, Toronto 182, Ontario.

Survey of Commodity Movements by Truck

A major new survey of commodity movements by trucks is being carried out by the Transportation and Public Utilities Division of DBS. Designed to collect information on the origin and destination of commodities transported by for-hire trucks in Canada, the new survey results from the successful completion of a pilot survey of trucking companies' shipping documents carried out by the Division last summer. (An item on the pilot survey appeared in the *Statistical Observer,* Volume 4, Number 1, April 1971.)

In recent years, trucking has become a major factor in the distributive process in the Canadian economy. Yet, despite its importance and in contrast to other modes of surface transportation, almost no information is available concerning the flow of goods by trucks in Canada, except in very general terms. Consulting firms, market research organizations, various government departments (both federal and provincial), transport organizations, commissions, and in particular, recent federal-provincial economic conferences have all strongly urged the Bureau to attempt to fill this large gap in commodity flow statistics.

In the past, one of the major problems in obtaining statistics of this kind was finding the raw data required. The Pilot Study established the feasibility of surveying trucking firms' shipping documents which contain all the basic information required – nature of shipment, weight, rate and origin and destination. As a result, a much larger survey is presently being undertaken. Approximately five hundred motor carrier companies are being covered and it is expected that more than 150,000 individual records of actual truck shipments will be collected from this new survey. Among other things, the information will be useful in assessing comparative volumes of goods handled by each mode of transport, determining the nature of goods carried, where freight originates and where it is destined. The statistics can also be used in estimating the movements of goods between provinces and regions, in highway planning, to provide estimates of revenues earned and ton-miles performed between specific points, and to assist in the production and adjustment of tariffs.

One of the features of the new survey is that all of the work is being done by Bureau staff with a minimum of interference in terms of both time and effort to the companies involved. Representatives from the eight regional offices of DBS across Canada have been specially trained to sample the shipping documents of each of the trucking firms involved in the survey. This work is scheduled to be completed by mid-summer, and the Division expects that preliminary national aggregates of tonnage, revenues and ton-mile data will be available by the end of the summer: final results of the survey should be available by the end of 1971.

Further inquiries should be directed to Mr. P.T. Crosby, Project Manager, Transportation and Public Utilities Division, Economic Statistics Branch, DBS, Ottawa.

Regional Estimates of New Brunswick Labour Force

A recent study by the New Brunswick Office of the Economic Advisor attempted to produce sub-provincial annual estimates of the labour force in that province. Provincial labour force data are available on a monthly basis but the most recent sub-provincial statistics are from the 1961 Census.

A series of estimates for counties, urban areas and economic regions of New Brunswick were made for various years and compared with other indicators. Those estimates which most closely met the criteria set for the study were chosen as representative of the labour force.

Despite the experimental nature of the exercise, it is hoped that the results will be useful especially for government policy makers and businesses interested in locating in certain areas. However, the authors of the study point out that these estimates should be considered only as general indicators of the actual labor force in the areas concerned.

The complete study is described in a paper "Progress Report and the Feasibility of Estimating Labour Force Annually by Sex for Counties, Urban Areas and Economic Regions". *For more information, readers are invited to contact Mr. George Fox, Office of the Economic Advisor, Fredericton, New Brunswick.*

British Columbia Surveys of Imports

During the past decade, there has been, in British Columbia, a great demand for a multitude of commercial products which were unavailable from sources within the province. In recognition of this, the Economics and Statistics Branch of the B.C. Department of Industrial Development, Trade and Commerce has undertaken to survey specific groups of import commodities in an effort to inform the business community of the extent of this potential market. An important objective of these surveys is to provide an analysis of commodity movements as, in many cases, the value of these imports accounts for a significant portion of the provincial market.

The surveys are designed to indicate such factors as the recurring requirement for the product, its prospective use and the magnitude of the potential domestic market. It is felt that the surveys will point to areas of additional opportunity for British Columbia manufacturers and thereby contribute to the growth of industrial productivity in the province.

Statistics on Electrical Contracting Industry Available Soon

The electrical contracting industry was the second industry to be studied by the DBS Business Finance Division in the census of the construction industry. Contractors are providing some financial as well as operating information for 1969, such as volume of business, payrolls, materials purchased, sub-contracts and overheads and profits. Other questions asked in this census relate to principal type of construction, manpower utilization and organization.

The publication containing statistics collected for 1969 is to be released in the fall of 1971. The data in this report will enable the contractor to assess his operations; the trade associations to study the industry; the suppliers to have a more complete basis for planning; and the governments to conduct improved industry analyses for the formulation of economic and business programs and policies.

Standard Industrial Classification Revised

Canada's Standard Industrial Classification, the oldest and most widely used of our existing standard classifications has recently been revised. The SIC manual was first published in 1948 and revised in 1960.

Although revision of the classification creates problems of continuity in the analysis of time series, periodic revision is essential. The Canadian economy is dynamic, and the classification, if it is to be useful, must reflect the changes in the economy. The present revision is not as extensive as that of 1960. The main divisions of the classification are unchanged, and few major groups have been altered.

Revisions are timed to coincide with the decennial census of population. The English version of the classification was released in February and the French version in June. Copies of the *Standard Industrial Classification Manual* (catalogue number CS12-501) are available from Information Canada for $6.

The Canadian Classification and Dictionary of Occupations

A coding manual entitled, *Occupational Classification Manual, Census of Canada, 1971,* based on the *Canadian Classification and Dictionary of Occupations* (CCDO), was released in two volumes during the period from April to June 1971. Volume 1, in English and French versions, provides definitions for the groups which make up the classification. Volume II, in English and bilingual versions, contains lists of occupations arranged in both alphabetical and classified order.

The CCDO is new and unique. It provides, for Canada, a multi-purpose instrument for use in manpower research, in the formulation of manpower policies, in support of employment and educational programs, for statistical survey purposes (including census taking) and for operational activities such as employment placement, employment counselling, immigration and promoting mobility of workers within the country. It is anticipated that the CCDO will result in more comparable occupational data of improved quality. This is expected to come about through the standardizing of occupational categories used in different programs and consequently, the occupational statistics and other information derived from them.

Traditionally, the census occupational classification manual used in the immediately preceding census is revised to take account of changes in the occupational composition of the labour force resulting from industrial and technological developments in the decade. In order to achieve a standard occupational classification, a fundamental departure from the past was indicated. Thus, since 1965, the new classification inherent in the CCDO has been developed through a co-operative project of the Department of Manpower and Immigration and the Dominion Bureau of Statistics under the joint direction of Messrs. J.E. Andoff and Neil L. McKellar. These same two men had worked together in the past on the development of the International Standard Classification of Occupations (ISCO) and, because of this, were able to shorten considerably the time required to complete a project of such massive detail.

The dictionary will not be published before the end of 1971, although working copies will be used for census purposes. However, since the classification was completed to the unit group level about a year ago, it was possible to compile a coding manual based on the CCDO in time for the 1971 Census.

Alberta Bureau of Statistics Projects

Census of Post-Secondary School Students – The Alberta Bureau of Statistics is currently carrying out a census of post-secondary school students below university level in co-operation with the Alberta Human Resources Research Council. The school census will be compared with the 1971 Canada Census to determine whether or not the population of these schools represents a cross-section of the Alberta population of similar age groups.

Propane Market Maximization Study – This study was done jointly with the Alberta Freight Bureau. It is divided into two sections. Section I comprises a historical picture of propane production and consumption in North America by province and state between 1959 and 1969 and then projects these volumes into 1978. Section II traces the development of liquid propane gas transportation in North America and points out possible solutions for problem areas.

Proposed System of Construction Price Statistics Outlined at Recent Conference.

At the 15th annual meeting of the American Society of Cost Engineers, held in Montreal, C.M. Jones (Head, Capital Expenditures Prices Section, Prices Division, Economic Statistics Branch, DBS) presented a paper on Canadian construction price statistics.

Mrs. Jones began her presentation by describing the present DBS program to expand statistical coverage of the construction industry and the progress made in carrying out this program. She invited those present at the meeting to comment on the DBS program and thereby help the Bureau determine needs and priorities.

Mrs. Jones went on to explain her views of the requirements for a system of construction price statistics, the uses and users of the system, the agencies that would need to become involved in producing such a system, and then gave a hypothetical example showing the format such a program of statistics could take. In summary, the strengths, weaknesses and omissions of the proposed system were pointed out.

In Mrs. Jones' view, a complete system of construction price statistics requires data on:
1) Construction inputs (materials, wage rates etc.);
2) contractors' selling prices; and
3) estimated selling prices for the main types of structures – houses, apartments, schools, hospitals, commercial buildings roads, pipelines, refineries, water and sewer construction, and utilities (electric, telephone and railways). The kinds of data needed are price indexes, showing both time and place comparisons, average unit costs and costs per some unit of measure such as a square foot.

Another requirement is that the data provide detail on metropolitan areas. This aspect is important for both users and producers of construction price statistics. Users most frequently request statistics pertaining to a metropolitan area. Also, because of the nature of the construction industry in Canada, with its relatively small volume and the heterogeneity of the construction work done, the use of metropolitan area information as a data base is the easiest and least expensive way to produce meaningful statistics.

Some of these requirements for a complete system of construction price statistics, are now being met. In the field of construction inputs, DBS publishes manufacturers' selling prices for materials, union wage rates, and purchase prices of capital used. Collection of data has begun on a modest basis, for some elements of contractor's selling prices and on estimated selling prices for single-unit houses and office and industrial buildings. DBS also publishes estimated selling prices for roads, and electrical utilities. Price data is now being collected for telephone utilities.

Construction price statistics have many and varied uses. Some users, such as statisticians and economists, require the complete system of statistics for the preparation of measures of real output, national expenditures and productivity, and for economic analyses. On the other hand, purchasing institutions require mainly indexes of structures' selling prices and contractors' selling prices. The cost and price data needed to produce the statistics are used by architects, engineers, surveyors etc. to prepare project proposals and construction estimates.

Mrs. Jones pointed out that production of a complete system of construction price statistics requires the co-operation of many agencies and organizations, in addition to the contractors themselves; for example, provincial and federal government departments and agencies, contractors' associations, municipal works departments, professional organizations of engineers and architects, etc. Participating groups need to discuss their requirements, review available data and help decide how to proceed with producing the required statistics.

The hypothetical statistics system outlined in the paper points out the great quantities of detailed data needed to produce a good set of construction price statistics. Proposed techniques and survey areas were also included in the example.

In Mrs. Jones' view, the strength of this proposed system lies in the amount of detailed statistics that would result. Such detail allows the user to assess the validity of the system for his needs and also permits the aggregation of the statistics into many special purpose indexes. This system also provides information on changes in inputs (both qualitative and quantitative), thereby giving greater insight into productivity changes.

The greatest weakness seen in the proposed program is that a complete system of construction statistics will be costly. Another deficiency is that the metropolitan area sample omits many small areas where construction prices are required. Also, the use of hypothetical models rather than real world prices in producing the statistics is seen as a weakness; however, Mrs. Jones outlined ways in which this deficiency can be offset.

Canadian Economics Association 1971 Annual Meeting

Economists from universities, federal and provincial government departments, businesses and research organizations met at Memorial University, St. John's, Newfoundland from June 2 to June 5, to discuss current problems and new developments pertaining to economics.

A wide variety of subjects – public finance, monetary economics, economic development, health economics, regional economics, price theory, etc. – were covered at the 1971 conference. In addition, there was a special session on statistics to which Mr. G. Garston of the DBS National Output and Productivity Division and Mr. H. Adler, DBS Senior Advisor on Integration, contributed.

Other conference participants from DBS included D. Gower, Labour Division and J.R. Podoluk, Consumer Finance Research Staff.

A more detailed report on the 1971 Canadian Economics Association meeting will appear in the October issue of the *Statistical Observer.*

Forestry Statistics Conference

The 1971 Federal-Provincial Conference on Forestry and Forest Product Statistics, held in Ottawa on March 18 and 19, was the fourth in a series of meetings which began in 1963. The purpose of these conferences is to provide a vehicle for consultation, with respect to forestry and forest product statistics, between the Dominion Bureau of Statistics and other federal departments, provincial governments and industry. Meetings have been held at intervals of two to three years. The Dominion Statistician is the chairman of the Conference, and the Secretariat is provided by the Forestry Statistics Section of the DBS Manufacturing and Primary Industries Division.

Provincial delegations to the Conference are responsible for representing the interests of their government and of the industries in their province concerned with this area of statistics. The provincial delegates are also responsible for the preparation and presentation of provincial briefs dealing with statistical requirements and priorities. At the March 1971 Conference, all provinces, except Saskatchewan, were represented.

In recognition of their national status, the Canadian Pulp and Paper Association and the Canadian Lumbermans' Association were invited to participate in the Conference independently of the provincial delegations. Federal government departments, other than DBS, who participated in the Conference were: the Department of Fisheries and Forestry, represented by the Forest Economics Research Institute; the Department of Industry, Trade and Commerce, represented by the Wood Products Branch; and the Department of Regional Economic Expansion, represented by the Natural Resource Planning Division.

A most valuable by-product of these Conferences has been greatly increased contact and communication, on an ad hoc basis, between DBS and provincial agencies interested in forestry and forest products statistics. As a result of one of the recommendations of an earlier Conference, DBS now employs a liaison officer for the forest industries in British Columbia. This liaison officer is located at the Regional Office of DBS in Vancouver as an extension of the Forestry Statistics Section of the Manufacturing and Primary Industries Division in Ottawa. It is intended to employ such liaison officers in other areas as soon as resources permit.

The briefs submitted at the 1971 Conference dealt mainly with the statistical requirements of the participating government departments and industries. The Conference resulted in the formulation of a number of recommendations which set out the priorities agreed upon. The following are the recommendations that were adopted:

1) that DBS, either directly or through a consultant, take the leadership in organising a federal-provincial working group to review the entire system of forestry statistics for the express purpose of improving the utility of the data for all types of users;
2) that the Forest Economics Research Institute survey all the provinces to determine the need for and best means of collecting data concerning the recreational use of forest land;
3) that high priority be given by DBS to the employment of liaison officers for the forest industries in appropriate regions with duties similar to those of the liaison officer for the forest industries in British Columbia;
4) that DBS contact each of the provinces to determine their views as to the format and timing of the next Conference.

Federal-Provincial Meeting Discusses Agricultural Statistics

Representatives of the provincial governments, farmers, farm organizations, DBS, the Canada Department of Agriculture, other federal government departments and the United States Department of Agriculture gathered in Ottawa on March 3 and 4, 1971 for the twenty-second Federal-Provincial Conference on Agricultural Statistics. Mr. L.E. Rowebottom, in his address of welcome to the delegates, stated that one of the main purposes of the Conference was to develop better communication among the gatherers, users and suppliers of agricultural statistics. W.L. Porteous, Director of the Agriculture Division, pointed out, in his opening remarks, the great and very rapid structural changes taking place in the agricultural industry and the need for more and better statistics for the planning and policy-making required to meet the new situations.

Five speakers (representatives of farmers, farm organizations, agribusiness and financial institutions) presented their views on the present and future statistical needs of farmers and farm organizations. Although many different suggestions were made, the main requirements were seen as improved timeliness and more market information.

The Conference then discussed the dissemination of economic and commodity statistics to farmers for decision-making purposes. At the 1970 Conference, it was recommended that the DBS Agriculture Division, in co-operation with the Information Divisions of DBS and the Canada Department of Agriculture, should take special steps to deal with information dissemination. During the past year, radio tapes and press releases were prepared and issued in response to this recommendation. However, because of the increasing demand for more information of this type, the topic was discussed again at the 1971 Conference. The three speakers generally agreed that the most important aspects of information dissemination are access and immediacy. The ways in which the Ontario Department of Agriculture and Food and the United States Department of Agriculture meet these requirements in their statistical dissemination programs were outlined by representatives of these two organizations.

The second day of the Conference began with a presentation describing the Agriculture Division's expanded program for forecasting farm income. In the fall of 1970, provincial farm income forecasts were made for the first time. The methodology and some of the difficulties encountered in this process were outlined. It was also reported that work is being done to determine the feasibility of forecasting farm cash receipts on a quarterly basis.

The Bureau's plans for the development of a general purpose

enumerative sample survey for agriculture were outlined for the Conference. The present methods of collecting agricultural statistics are not compatible with the structure of today's agriculture. With an enumerative sample survey, data on farm numbers, acreages and income distributions could be obtained on a regular basis. It was proposed that the Bureau launch an annual full-scale enumerative probability sample survey in 1972.

Another topic discussed at the Conference was the use of electronic data processing within the Agriculture Division of DBS. A system is being devised to transfer the data gathered in the June and December crops and livestock surveys from survey forms to magnetic tape. Computers can then be used for editing, matching with previous surveys, summarizing and cross-tabulating the data. A central register of farms is also being established which, in addition to providing a mailing list for current surveys, can be used to help design special-purpose surveys.

The Conference closed with statements by DBS and provincial government delegates, and with the presentation of recommendations. The following are recommendations approved by the Conference.

1. It is recommended that the "Feedback Committee" continue to study and develop improved methods of disseminating statistical information to farmers. For example, it was suggested that study be given to the possibility of setting up a new type of statistical reporting service which would supply information on a frequent, flexible and timely basis. Also proposed was a monthly digest of key facts assembled by DBS for distribution to farmers.
2. It is recommended that a committee be formed to study means of speeding up collection and dissemination of statistical information. This committee should report its findings to the 1972 Federal-Provincial Conference on Agricultural Statistics.
3. It is recommended that the reference date for livestock inventories be December 31 rather than December 1. Reference dates for other quarters of the year should then be shifted accordingly.
4. The delegates recognized the need for an annual probability sample survey and recommended that every effort should be made to promote its implementation.

Federal-Provincial Committee on Classifications

The first meeting of this committee was held in January 1971. In attendance were representatives from seven provinces and from DBS.

Discussion ranged over the present state and future development of standard classification work with emphasis on the existing standard classifications for industries, occupations, commodities and geographical areas, and the need to work closely together in the development and early stages of revision of existing classification systems.

A second meeting was planned for the autumn of 1971.

Public Finance Statistics

In November 1970, the first federal-provincial conference of users of public financial statistics was held in Ottawa. The Governments Division of DBS played a major role in convening the conference and in preparing discussion papers to stimulate the deliberations of the delegates. All provincial governments (except British Columbia) and several departments and agencies of the federal government were represented at the meeting.

The Conference chairman, Mr. G.A. Wagdin, reviewed the reasons for calling the conference and stated that the main objective of the meeting was to examine user requirements and hear the delegates' views on the existing public finance statistics program and the areas for improvement. Other topics discussed were: project priorities, timeliness, possible expansion of "balance sheet" information, especially on a provincial level, and regional data needs.

Various recommendations and proposals were made at the Conference. In response to these recommendations, the Governments Division has accelerated the release of some publications and is investigating the possibility of quarterly reports for certain data. Another project undertaken as a result of a Conference proposal is the new format of the publication on provincial government debt. (See **New Reports**, p.14.)

Metric System Discussed at ASA Meeting

Dr. Arthur Smith, Chairman of the Economic Council of Canada, addressed the April meeting of the Ottawa chapter of the American Statistical Association. The topic of his speech was "Canada in a Metric World". A summary of his remarks follows.

Most Canadians have spent the largest part of their lives in a "non-metric" world. Only when travelling abroad or working in the world of science do we encounter the full range of the logical and simple system of measurements known properly as the *Système International d'Unités* (SI), commonly referred to as the metric system.

However, the importance of the metric system in Canada is bound to increase in the future. In January 1970, a White Paper entitled "Metric Conversion in Canada" was released by the federal government. Taking into account the breadth of the use of the metric system throughout the world, and the views of industry, consumer associations and other groups in Canada, this White Paper recognized and accepted three basic principles for guiding future government policy in this area.

(1) The eventual adoption in Canadian usuage of a single coherent measurement system based on metric units should be acknowledged as inevitable and in the national interest.
(2) This single system should come to be used for all measurement purposes required under legislation, and generally accepted for all measurement purposes.
(3) Planning and preparation in the public and private sectors should be encouraged in such a manner as to achieve the maximum benefits and minimum costs to the public, to industry, and to government at all levels.

No specific time limit was set in the White Paper for the conversion, but the paper noted that information on the metric system should be made readily available to the public, and that

the introduction of the system should be encouraged wherever the benefits are clear and the costs minimum.

This White Paper did not receive wide publicity, but it could have profound and far-reaching effects on our society.

The desire to measure and classify physical objects and forces is one of those fundamental aspects which distinguishes a civilized society. As man's knowledge of the world has become more sophisticated, his interest in refining the measures by which he defines the height and length and weight and intensity of things has increased.

Numerous measures and systems of measures evolved throughout time: many have passed into history but, even today, there remains an array of measures of striking variety and incompatibility. In Canada, we have a complex set of legally recognized non-metric units, based largely on the British system. In spite of the fact that these units make up our official system, many Canadians would find some of them quite unfamiliar, such as the gill (1/32 of an imperial gallon), the link (.22 of a yard) and the fluid dram (1/1280 gallon). Even for more familiar measures, the conversion factors are far from common knowledge.

In the past, Western society could live comfortably with a variety of disparate measures and systems of measures. But as our society has become more technologically oriented, and as trade has grown to large dimensions, the importance of having compatible and accurate physical measures has increased considerably.

With respect to compatibility, there are considerable problems both within systems and between systems. For example, the gallon in the United Kingdom is 10 parts per million smaller than the Canadian gallon.

The complexity of the conversion factors between the major systems makes compatibility awkward and a high degree of accuracy between systems difficult.

All these factors have combined to make the necessity for a common and universal system of measurement apparent, particularly as our technological sophistication continues to grow. The metric system is in the process of becoming that common system because of its directness and simplicity. Since its introduction in the late eighteenth century, it has spread, first throughout the domain of science, and then to common usage in the majority of countries in the world.

The major alternative to the metric system remains the inch/pound system, but it is becoming a narrowly based alternative. For many years, the main users of this system have been the United States and the British Commonwealth nations. However, newly emerging nations tended to opt for the metric system because of its simplicity, its scientific basis, and its widespread usage. Moreover, the number of those countries using the inch/pound system and other non-metric systems has decreased. India enacted a law in 1958 which made the metric system the only legal system after 1968; although the metric system had been legal in India since the 1870's, it was not in common usage. Japan has virtually completed a lengthy conversion to the metric system, and South Africa, Australia, New Zealand and Ireland are in the process of converting. Significantly, the United States is on the verge of completing a lengthy study on the subject of metric conversion. This study is scheduled to be released during 1971, and could well have a large impact on Canadian thinking with respect to conversion.

The United Kingdom decided, in 1965, to convert to the metric system by 1975. The pressure behind this change came, to a large degree, from British industry. The probability that the United Kingdom would enter the European Economic Community, and the fact that more than 50 per cent of the foreign trade of the United Kingdom is with metric countries, obviously lay behind the industrial sector's assessment of the situation.

Thus, the use of the metric system has been spreading gradually throughout the world. At present, about 90 per cent of the world's population lives in countries which use the metric system as their primary system of measurement, or in countries in the process of metric conversion. Sixty-five per cent of world trade occurs between metric countries. So Canada now finds itself part of an inch/pound North American island in a basically metric world.

In actual fact, the metric system has already made considerable practical inroads in Canada. Three of the six basic SI units are in full use, namely, the ampere, the candela and the second, leaving only the introduction of the metre, kilogram and degree Kelvin. Additionally, we use a decimal currency. Metric units are used almost exclusively in scientific work and in much technological work. The pharmaceutical industry (in both Canada and the United States) has converted entirely to the metric system, and other industries are moving in this direction. For instance, our optical, photographic and electronic industries are partially or mainly oriented to the metric system. All these are significant movements in the direction of "metrication". Nonetheless, we have a long way to go before we become a metric nation.

Metrication is a multi-stage process, not one that occurs in a single step. But within these stages, there are four broad levels of acceptance of the system which can be distinguished. First, there is legalization – the recognition of the metric system as a legitimate system of measures. The metric system is legal in both Canada and the United States – and has been legal in Canada since 1873.

The next level is adaption, in which the metric system and another system are used side by side. This is usually a transitory stage. The units of the older system are "translated" (on labels, in documents, etc.) into the equivalent metric units, but the basic "language" of measurement is still founded in the older system.

Conversion is the third level of acceptance of the system. This level has considerable economic implications, because it implies not only the use of metric units for all measures, but it also implies, because of our propensity to use (and the convenience of) round numbers for common weights and dimensions, that the dimensions and weights of many consumer goods, industrial products, etc. will have to be changed. The trade with metric nations and the need for international standards

would tend to channel these changes in specific directions. In other words, after conversion, not only are the units metric, but the basic language of measurement would be founded in the metric system.

The final stage is compulsory usage. At this point, the use of other systems is essentially forbidden, except in particular situations.

In Canada, we passed the first stage almost a century ago, but we have not, on the average, advanced very much further, except in particular sectors and in our scientific activities. Great difficulties have to be overcome, and these are magnified by the nature of our relationship with our major trading partner, the United States.

In a sense, we face a difficult dilemma. We cannot convert to the metric system at a rate which far outstrips any U.S. moves in this direction. The magnitude of our trade with the United States, the existence of a great many U.S. subsidiaries in Canada (some of which are closely integrated with their parent company's operations), and the related commonality of many of our capital and consumer goods would make this exceedingly difficult, if not impractical.

On the other hand, Canadians cannot afford to ignore the implications of the basic world-wide trend toward the metric system, and, indeed, an awareness of the inevitability of this trend comes through clearly in the government's White Paper. The degree of dependence of our economy on foreign trade underlines the importance to us of the actions of other countries in this area. Most of our other major trading partners use the metric system, or are in the process of conversion. Further, we must be prepared for the possibility of significant moves toward metrication in the future by the United States, so that we are not left behind.

There are certain relatively simple actions which could be taken immediately in Canada that would move us measurably along the road to metrication. One of these would be to start on the replacement of the Fahrenheit scale with the Centigrade scale.

With respect to the more general aspects of metrication, conversion should be expedited where the costs are minimal, or where there are obvious economic advantages to be gained. As will be indicated later, the rate of conversion in the more difficult sectors should be phased to avoid the excessive costs which could well be associated with a mandatory once-and-for-all change over a short time period. In line with this, much more serious consideration than is being given at present should be directed to uncovering the magnitude and range of the economic and social costs and benefits of conversion.

What are some of the costs or disadvantages of conversion, and what are some of the economic and social benefits? First of all, countries which have recently carried out complete conversion, such as India and Japan, have found that the costs of conversion, on the whole, were less than had been estimated. Nonetheless, there will be substantial initial costs involved, even though these can be mitigated by phasing.

In general, with respect to the cost and benefits of conversion, the movement to the metric system by Canada will undoubtedly be beneficial over the longer term to both our export and import trade, since it will constitute the removal of what is essentially a nontariff trade barrier. The results for Canadian industry will be increased productivity (partially because of the greater simplicity of the system and the rationalization involved in adopting it), lower prices for materials and equipment (because of the improved access for foreign suppliers to Canadian markets and increased specialization and efficiencies among Canadian producers), and improved general competition (which will also lead to increased productivity). The introduction of the metric system would undoubtedly have a positive effect on our economic growth.

More specifically, the costs and benefits of metrication can be broken into two categories, those associated with "software" conversion and those associated with "hardware" conversion. The problems associated with software conversion are less difficult to solve, partially because their economic impact is less severe, or can be more easily attenuated than the problems of hardware conversion of things. Conversion with respect to software is to a large extent a problem of "translation" and of the education of the public. Real conversion with respect to the hardware side of things often means redesign and replacement.

Typical software-oriented problems that would be encountered during conversion include the reorientation of certain aspects of the field of education, the familiarizing of workers with the metric system, the retabulation of existing data, the rewriting of certain computer programs and the revision of some legislation, regulations, and standards.

On the hardware side of matters, however, the problems are more formidable. The initial costs incurred during the period of conversion could be quite large, although no detailed estimates have been made for Canada. If the conversion is properly planned in the various industrial sectors, in consultation with related industrial sectors and with their customers, and if it is phased over a realistic time period, many of the expenses could not be categorized as additional since they would be for the replacement of obsolete equipment which would have to be replaced in any event. At the same time, in many situations there are recognizable medium- and long-term benefits associated with the hardware aspects of conversion. Principally, these come in the form of increased opportunities for trade with other metric countries, as indicated earlier, and the rationalization of production made possible by a more coherent and simpler system of measures.

Major initial costs may be experienced by those industries which have considerable investments in capital equipment, such as machine tools. Again, however, these costs can be minimized by proper planning and co-ordination in the program of metric conversion. Benefits can also be derived from metrication if the conversion is accompanied by new standards which reduce the irrationally large collections of sizes found among such goods as twist drills, fasteners, and paper products (especially paper and envelope sizes).

Retail packaging will considerably change with metrication,

and this will involve sizeable initial costs to industry. On the benefit side, however, metrication, and the simpler standards that will undoubtedly accompany it, will enable the consumers to determine more readily than at present exactly how much they are getting for a certain price.

On the other hand, it is important to remember that there are extra expenditures for many Canadian industries which result from being part of the last inch/pound stronghold in a metric world. These expenditures arise, in part, as a consequence of the necessity in many cases to maintain double inventories. As long as North America remains inch/pound-oriented, our industries will be at a competitive disadvantage, a disadvantage which will vanish once the metric system is adopted by Canada and the United States.

In general, those industries which are significantly involved in the importing and exporting of goods should take a closer look, if they have not already done so, at the pros and cons of conversion.

Canada has recognized in principle that it will eventually become a metric country; there are significant costs and benefits involved in the conversion, but the costs are mostly in the short term while the benefits extend to the longer term; and there may be considerable advantages to moving somewhat more rapidly than the United States towards metric conversion. In Canada, we should be studying this matter carefully so that the conversion may take place as smoothly and inexpensively as possible, so that we understand the real costs and benefits involved, and so that we are not unprepared to keep pace (at the very least) with the actions the United States may take in this area. Presumably, this will be one of the concerns of the new Standards Council of Canada.

New Publication for Air Carrier Financial Statistics

A new report, *Air Carrier Financial Statements* (catalogue number 51-206), scheduled for release in June 1971, contains 1970 data, representing an improvement in timeliness of approximately two years from its predecessor, *Civil Aviation Annual.* This achievement is made possible through the co-operation of the air carriers and by not waiting until all carriers have been visited by the CTC (Air Transport Committee) audit division. By this means, the composite financial statements of the industry, as well as the individual reports of the transcontinental and regional carriers are available early enough to be of current use rather than of historical interest only.

The release of the new report marks the end of a series of publications entitled *Civil Aviation,* published since 1937 in monthly, preliminary annual and annual editions. The other two publications which combine with *Air Carrier Financial Statements* to fully replace the *Civil Aviation* series were released previously. The first issue of the quarterly report, *Air Carrier Operations* (51-002) was released in October 1970 and the first issue of the monthly *Transcontinental and Regional Air Carriers* (51-001), in April 1970.

Air Carrier Financial Statements, catalogue number 51-206 is available from the Publications Distribution Unit, DBS, Ottawa.

Changes in Business Finance Reports

Financial Statistics of Industrial Corporations – In 1970, the quarterly publication, *Industrial Corporations* (catalogue number 61-003), was expanded to include the complete financial statements of the industries instead of only an abbreviated profit statement. In 1971, this publication will be expanded further to include seasonal adjustment of a much larger selection of items. (Seasonal adjustment of financial data is, to a large extent, experimental and exploratory, until the significance of such adjustment in this area can be established.) The publication will also provide more analysis as well as financial indicators such as the financial position, short- and long-term liquidity, various aspects of profitability and cash flow. These additions are expected to improve the usefulness of the data for analysis of corporation finance.

Fixed Capital Stocks and Flows – The fixed capital stocks and flow data for manufacturing (catalogue numbers 13-522 and 13-523), published in 1967, used the 1948 Standard Industrial Classification and covered the period from 1926 to 1960 only. The conversion of this series to the 1960 SIC and updating to include 1969 data has now been completed. The material has been reworked, and now provides fixed capital stocks and flows information for the 20 major manufacturing groups for the years 1926 to 1969 inclusive.

New Format for Provincial Government Finance Report

The Governments Division of the Financial Statistics Branch,

DBS, is bringing out a greatly expanded version of its publication on provincial government finance. The new report, entitled *Provincial Government Finance, Assets, Liabilities, Sources and Uses of Funds* (catalogue number 68-209), replaces the previous bulletin on this subject, *Provincial Government Finance, Debt.*

The format of the new publication features a full balance sheet presentation of the financial data, sources and uses of funds statements, and reconciliation of the information with the financial flows series. Each issue will also contain notes on economic development in the provinces, by quarters.

The first issue is expected to be available in November 1971, and will contain actual data for 1968-69 and preliminary data for 1969-70.

Provincial Government Finance, Assets, Liabilities, Sources and Uses of Funds, catalogue number 68-209, annual, will be available from the Publications Distribution Unit, DBS, Ottawa. Price: $.50.

Service Bulletins Introduced for Each Transportation Mode

Each subject matter area of the Transportation and Public Utilities Division will now issue service bulletins to meet the demands of both government and non-government users for more timely release of information and for the various types of information beyond the scope of existing publications. The bulletins are also intended to serve as a vehicle for advance release of key statistics from regular series, as well as any special tabulations of interest to users.

The following is a list of the service bulletins and their catalogue numbers.

Aviation Statistics Centre – Service Bulletin (51-004)
Railway Transport Service Bulletin (52-004)
Road Transport Service Bulletin (53-006)
Water Transport Service Bulletin (54-003)
Communications Service Bulletin (56-001)

The bulletins are bilingual and are for circulation to all major users and respondents. Subscriptions, priced at $5 each, may be obtained by writing to the Publications Distribution Unit, DBS, Ottawa.

Plans for a Statistical Digest of Tourism Information

The Provincial Liaison and Consultative Services staff are compiling a digest of statistics on travel, tourism and outdoor recreation in Canada. This report will bring together related data from many DBS publications and also incorporate some information from other sources.

The main purpose of this publication is to enable DBS to answer more efficiently the many enquiries received about this subject. Also from this publication, users will be able to describe their requirements for more detailed information or special-purpose data.

The report is planned for release early in 1972.

Preliminary Estimates of 1969 Income Distributions Now Available

Income Distributions By Size in Canada, 1969, Preliminary Estimates, catalogue number 13-542, was released in March 1971. Data in this preliminary report are based on a survey of 12,000 households taken in the spring of 1970. The survey inquired into aspects of family finances other than income: data on financial and selected other assets and debts were also collected.

According to figures in the preliminary report, family incomes increased by 17 per cent from 1967 to 1969. In 1969, average family incomes varied from $6,881 in the Atlantic Provinces to $9,793 in Ontario. Unattached individuals, persons living alone or in a household where they are not related to anyone, reported an average income of $4,003 in 1969.

The preliminary estimates also include some analysis of low income families and unattached individuals. Using the low income cut-offs adopted by the Economic Council in its Fifth Annual Review and adjusted for the increase in the Consumer Price Index, the preliminary estimates indicate that the proportion of families in the low income group dropped from 18.6 per cent in 1967 to 17.3 per cent in 1969, and the proportion of unattached individuals in that group decreased from 39 per cent to 35.5 per cent during the same two years.

After a complete edit of the data, a full report, entitled *Income Distributions by Size in Canada, 1969,* will be published. The report, which will be similar in content to *Income Distributions by Size in Canada, 1965* (catalogue number 13-528), will be released in the fall of 1971.

Data collected in the spring of 1970 on assets and debts of Canadian families will be the subject of another report. Percentage distributions by size of various types of assets and debts will be shown by family income and other socio-demographic characteristics. It is expected that this report will be published by the end of 1971. The last similar report was *Incomes, Assets and Indebtness of Non-farm Families in Canada, 1963* (catalogue number 13-525); however, the reports differ in that the 1969-70 data include farm families.

Income Distributions by Size in Canada, 1969, Preliminary Estimates (catalogue number 13-542) is available for $.50 from the Publications Distribution Unit, DBS, Ottawa. Inquires should be directed to Mr. B. Mazikins, Assistant Chief, Surveys of Consumer Finance Research Staff, DBS, Ottawa.

Regional Development and Public Finance in the Atlantic Provinces

A recent report by the Atlantic Provinces Economic Council examines financial activities in the Atlantic Provinces in comparison with other Canadian provinces for the fiscal years 1959-60 to 1967-68.

The first part of the report deals with the provincial and municipal expenditures and revenues during the study period. It shows that total expenditures and revenues rose as rapidly in the Atlantic Provinces as in all Canadian provinces. However, own-

source revenues in this region did not increase as rapidly as those in Canada as a whole and, by 1967-68, the Atlantic Provinces had come to depend even more on revenues from the federal government. In addition, the Atlantic Provinces relied heavily on borrowing to finance expenditures, and in this region the costs of borrowing are very high

The final section of the report shows that the inadequacy of the region's own-source revenues is related directly to the area's relatively low income levels. An attempt is made to show that a development program for the Atlantic Provinces would raise income levels in the region which would in turn increase provincial and municipal revenues.

Regional Development and Public Finance, Pamphlet No. 17, Atlantic Provinces Economic Council, Fredericton, New Brunswick.

Detailed Statistics for Newfoundland and Labrador

The Economics and Statistics Division of the Newfoundland and Labrador Department of Finance has produced a comprehensive volume of statistics on all aspects of life in this province. The publication, entitled *Historical Statistics of Newfoundland and Labrador,* is intended to be a foundation document: supplements will be issued annually to up-date the data and to incorporate new series.

There are 23 sections in the report dealing with a wide range of socio-economic, financial and business statistics. The tabular material in each section is prefaced by a brief statement giving definitions and explanations of the terms used, the sources of data, and comments on the section's contents.

Much of the information in this first issue of *Historical Statistics* was obtained from DBS publications: some previously unpublished DBS data was also used. A limited amount of published and unpublished material was also obtained from other federal government departments and agencies and from provincial government sources.

In spite of the difficulties presented by changing statistical concepts and classifications, inconsistencies in data, and lack of reliable source material, efforts were made to have the statistics in this report cover as long a time period as possible. However, to facilitate the use of this information in economic analysis and forecasting, time series are given on a seasonally adjusted basis (wherever possible) as well as in the unadjusted form.

Historical Statistics of Newfoundland and Labrador is available from the Department of Supply and Services, Government of Newfoundland and Labrador, St. John's, Newfoundland.

Economic Forecasting and Travel Research in Alberta

Two recent publications of the Economic Research Branch of Alberta's Department of Industry and Tourism deal with economic forecasting and travel research.

Executive Report – 1971 reflects the opinions of more than 290 senior executives representing prominent Alberta business enterprises. In total, Alberta business executives predict a substantial upturn in the province's economic performance during 1971. Not only is the economy in general expected to make considerable gains this year, but each major industry – manufacturing, mining, agriculture, forestry, construction, wholesale and retail trade, recreation and travel – is forecasting substantial growth.

Another publication recently completed by the Economic Research Branch deals with one of Alberta's major industries – tourism. *The Economic Analysis of Vacation and Pleasure Travel in Alberta* will be an integral part of the Alberta Recreation Plan. In this report, tourism's contributions to business volume, income, employment and provincial government revenues are reviewed and analyzed.

Information about Executive Report – 1971 and Economic Analysis of Vacation and Pleasure Travel in Alberta can be obtained by writing to D.H. Sheppard, Senior Economist, Economic Research Branch, Department of Industry and Tourism, Government of Alberta, Edmonton 15, Alberta.

Alberta Labour Statistics

Two major labour statistics reports were prepared by the Alberta Bureau of Statistics during 1970: *Fourteenth Annual Report of the Alberta Salary and Wage Rate Survey, 1 August 1970* and *Working Conditions Survey, Alberta, 1 August 1969.*

The former report contains data obtained from a community pay survey of 185 occupations which involved 1,200 firms in Alberta. Data were compiled and published by type and size of firm for six major cities and for the province as a whole.

The latter, a supplement to the 1969 pay survey, presents a statistical summary, by type of firm, of standard work week arrangements, vacation-with-pay plans, paid statutory or public holiday policies, pay period frequencies, and daily rest or coffee break periods in a cross-section of Alberta industry.

Copies of these reports are available from the Alberta Bureau of Statistics, Edmonton 15, Alberta.

British Columbia Publications

Mobile Homes in British Columbia – A Socio-Economic Study – The study surveys the mobile home environment in British Columbia, providing a comprehensive description of mobile home parks, a characterization of mobile home owners and an analysis of the demand for mobile homes and their manufacture in British Columbia. The study was undertaken in response to the growing interest in the subject and because of the lack of current information.

A survey conducted in August 1970 forms the conceptual basis of the report. Copies of the questionnaires used are included in the appendix.

British Columbia Manual of Resources and Development – This manual deals with the resources – human, forest, mineral, agricultural, fish and water – of British Columbia. Its purpose is to present a concise and convenient description of the current and historical development of resources and economic activities

of the province. It also contains sections regarding the physiography, climate, geology, recreation and other aspects of British Columbia.

Establishing a Business in British Columbia – An Outline of Government Regulations and Services – The purpose of this brochure is to provide a general picture of the part played by the three levels of government – federal, provincial and municipal – in regulating and assisting business and industry in British Columbia. The booklet stems from the growing number of requests for information concerning the procedures involved in establishing a business in British Columbia. References are made to official sources for further information that potential investors may require on government regulations, facilities and services.

More information on these reports may be obtained from J.R. Meredith, Director, Economics and Statistics Branch, Department of Industrial Development, Trade and Commerce, Victoria, British Columbia.

Consolidation of Manpower Research and Labour Analysis Sections

The Special Manpower Studies Section of the DBS Regional and Manpower Research Staff was transferred from the Integration and Development Staffs to the Labour Division of the Economic Statistics Branch, and consolidated with the Analysis and Development Section of that Division.

The new section formed by this regrouping is called Manpower Research and Development and is headed by Mrs. Helen Buckley, formerly with the Special Manpower Studies Section.

Mrs. Irene Johnson, who was Chief of the Labour Division's Analysis and Development Section has moved to the Program Branch of Treasury Board.

Science Statistics Section Transferred

On April 1, 1971, the Science Statistics Section was moved from the Business Finance Division of the Financial Statistics Branch to the Education Division of the Socio-Economic Statistics Branch of DBS. This transfer was made as a result of the increasing importance of the DBS science statistics program in areas in which the Socio-Economic Statistics Branch already carries out many activities. For example, the Education Division now collects a significant amount of data on university research activities. The relocation of the Science Statistics Section will facilitate the further development of such programs and allow easier co-ordination of a comprehensive science statistics program. However, there will still be close collaboration with the Financial Statistics Branch to ensure maximum compatibility with regard to financial statistics.

Mr. H. Stead continues in his position as Chief of the Science Statistics Section.

Three Sections Integrated to Implement Census Data Access Program

The DBS Census Division has brought together several organizational components to facilitate implementation of the Census Data Access Program. Three sections – Data Dissemination, Computer Applications, and User Inquiry Service – are now integrated for this purpose. Mr. B. Giles has been designated as overall manager of the program.

Mr. E.M. Murphy has been seconded from the Research Subdivision to become Chief of the Data Dissemination Section, and Mr. K.P. Ellis continues as Chief of the Computer Applications Section. The responsibility for the User Inquiry Service has been assumed by Mr. Giles until a chief for that section is appointed.

Mr. W. Saveland and Mr. D.N. Nagnur from the Research Subdivision, and Mr. L. Roubillard of the Demographic and Social Characteristics Section have also been seconded to the Data Dissemination Section. Additional staff to work in this important program will be provided from the Research Subdivision, as they are needed.

Appointments

H. Adler has been appointed Senior Advisor on Integration, reporting to Dr. S.A. Goldberg, Assistant Dominion Statistician (Integration and Development). Mr. Adler previously was Assistant Director General of the Economic Accounts Branch.

W.S.C. Boswell joined the DBS Statistics Use and Information Services Group as a Publicity Officer. Mr. Boswell came to the Bureau from Vickers and Benson Advertising Ltd. in Toronto.

D. Buxton has moved from his position as Chief of the Planning and Analysis Section, CALURA to become Assistant Director of Analysis and Integration in CALURA.

I.B. Carruthers has been appointed Assistant Director, Statistics, Systems and Publications, CALURA. He comes to the Division from the DBS Central Classification and Company Establishment Integration.

H. Dowsett was appointed Chief of Integration in the Systems and Development Section of the DBS Education Division. Mr. Dowsett was formerly with the Department of Transport.

E. Kassirer, formerly with the Social and Human Analysis Branch of the Department of Regional Economic Expansion has been named Chief of Publications and Special Studies, under the Co-ordinator of Systems and Development in the Education Division.

S. Kayes has joined the Capital Expenditures Section of the Business Finance Division, Financial Statistics Branch for a one-year term, under the Career Assignment Program (CAP). Mr. Kayes comes to DBS from the Department of Regional Economic Expansion.

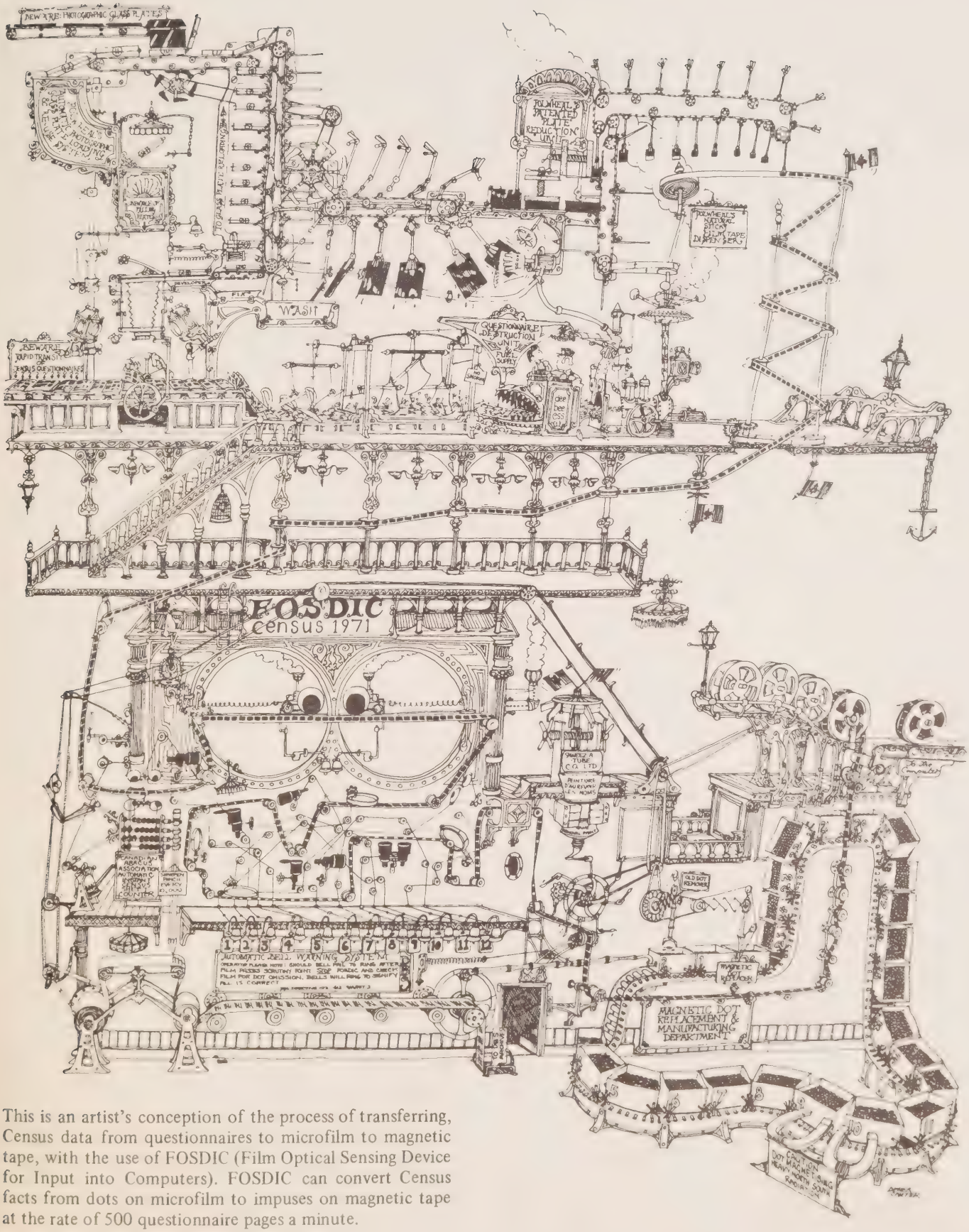
G.R. Labossiere has been named Acting Director General, Administration, with responsibility for DBS administration, finance, personnel, the bilingual program and management services. Before accepting this position, Mr. Labossiere was Director of Personnel Administration with the Bureau.

W.C. MacIver has been appointed Acting Director of DBS Financial and Administrative Services. Mr. MacIver was previously Acting Director of Administration.

D.B. Murray has assumed duties as Assistant Director of the Socio-Economic Computer Systems Subdivision with the DBS Methodology and Systems Branch. Before joining DBS, Mr. Murray had several years experience in computer systems development and operations with the British Columbia Telephone Company and Bell Canada.

J.G. Stinson has been appointed to the DBS Statistics Use and Information Services Group as a Statistics Use Development Officer in Vancouver. He comes to the Bureau from AVG Management Science Ltd., where he was manager of systems and EDP.

D.A. Worton has been appointed Director of the Central Planning Staff of the DBS Integration and Development Staffs. Mr. Worton joined the Central Planning Staff in July 1969, and has served as Acting Director since October 1970.



This is an artist's conception of the process of transferring, Census data from questionnaires to microfilm to magnetic tape, with the use of FOSDIC (Film Optical Sensing Device for Input into Computers). FOSDIC can convert Census facts from dots on microfilm to impuses on magnetic tape at the rate of 500 questionnaire pages a minute.

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STATISTICAL OBSERVER

CONTENTS

Now It's Statistics Canada

On August 2, 1971, the Dominion Bureau of Statistics became Statistics Canada. Authority for the name change was included in the 1971 Statistics Act, proclaimed May 1, but the actual conversion to the new title for Canada's 53-year-old statistical agency was delayed to allow time for the many other changes associated with acquiring a new name.

Concurrent with the name change was the introduction of a common design approach for Statistics Canada publication covers. On each cover, there is a large block of solid colour, each colour denoting a specific subject area. The new federal identity logotype, which consists of a bar and the maple leaf from the Canadian flag, followed by the name Statistics Canada, is also incorporated in the cover design.

STATISTICAL OBSERVER

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The Statistical Observer is a publication designed to contribute toward informing economists, statisticians and related professionals throughout Canada about selected statistical and research developments undertaken in Statistics Canada, in other federal departments and agencies, in provincial departments, in universities and in business and independent research organizations.

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Some Management and Research Considerations in Improving Timeliness

Several Statistics Canada staff members presented papers at the thirty-eighth session of the International Statistical Institute, held August 10-20, 1971 in Washington, D.C. One of the papers, by W.E. Duffett, Chief Statistician of Canada, and S.A. Goldberg, Assistant Chief Statistician of Canada, dealt with planning and co-ordination in a central statistical agency, and will be published in a future issue of the Canadian Statistical Review *(Statistics Canada catalogue number 11-003). Another paper by S.A. Goldberg and C.D. Hodgins (Department of Finance) dealt with some management and research considerations in improving timeliness. Dr. Goldberg presented at the meeting an oral summary of this paper. The summary is reproduced below.*

In a session devoted to the improvement of timeliness, it would be superfluous to dwell on its importance. By the same token, it appears worthwhile to make the following two points to place our views on the matter of timeliness in some sort of perspective. First, although promptness enhances the value of statistics, often immeasurably, reliable data which are late in coming are nonetheless useful for current analysis. The second point is related to the first: the decision-making process can, of course, be greatly assisted by early release of the latest results. However, good decisions are not, or should not, be based only on the latest figures but on a set of expectations about the evolving situation. A solid view on the outlook can be established only by an analysis of the historical record, extending over many months or years. The latest results may or may not confirm one's expectations about emerging events. While early data may reduce the amount of guesswork required to form a view about economic performance and the outlook, they are certainly no substitute for perception and sound judgment. Thus, the frequently quoted assertion that timeliness is important because "statistical information is a highly perishable commodity" is an oversimplification. Similarly, the analogy of late statistics to "last year's train schedule" is rather misleading despite the element of truth it contains.

Within this perspective, the issue of timeliness is of enormous importance. The image and effectiveness of the statistical office in the eyes of users of statistics and of the public at large is greatly affected by the timeliness of its output. This is because the notions of *timeliness* and *relevance* are so closely identified. The pressure for quickening the release of data is indeed growing in the degree to which statistics are being used in decision-making. To an increasing extent, users have manifested an understandable impatience with explanations of why it has not been possible to issue certain series earlier, however valid these explanations may have been.

Our paper is essentially a progress report of a timeliness program that has been under way in Statistics Canada during the past four years. We have tried to draw some generalizations from our experience but the generalizations may not be valid in circumstances different from our own.

The timeliness program was initiated in response to a strong concern, inside Statistics Canada and among our users, about our timeliness performance. The impressive record of our close neighbour, the United States, had contributed to raising the level of expectations of users in Canada.

In embarking on our timeliness program, we had to specify a set of goals. We started out with what might be called something of a slogan, "Monthly data before the end of the subsequent month; annual data before the end of the subsequent year". This has served, in fact, as a long-run goal, from which we are still quite a distance away, but it was not very helpful as a basis for immediate action. For this, we required targets which were, on the one hand, within our reach within a reasonable time and, on the other, would provide impressive payoff. We reckoned that such payoff would have a beneficial impact on the further development of the timeliness program in terms of internal morale and relations with users and respondents.

We therefore decided on a phased approach, covering a period of some three years. During the first year, we set as our main target the early release of the index of industrial production and a selected number of other important economic data; for the second year, the main target was the quarterly national accounts. Apart from their use in policy analysis, the index and the accounts embody a large range of statistics. They can, therefore, serve as an effective basis for rallying the timeliness of a large variety of current statistics. We had intended to give attention in the third year to other monthly and quarterly data and to annual statistics. For reasons I will mention later, we ended up with a "wait and see" policy in the third year.

We also had to decide on whether we should aim to release the earlier data in the full detail published hitherto. We felt that, in order to satisfy the needs of our users, we should begin by attempting to do so, keeping in mind that we were aiming at earlier statistics of comparable quality. The alternative of solving the timeliness problem merely by making available earlier summary statistics only, is, of course, much easier. This alternative is, at any rate, open as a possibility wherever the more ambitious one is not practicable.

We ended up publishing the earlier production indexes, the quarterly national accounts, imports, exports, and a number of other series in the full detail previously available. In a number of cases, notably employment and payrolls and the balance of payments, the earlier releases contain summary statistics only. The index of industrial production is now published after an interval of 6 weeks compared with the previous 9, and the quarterly accounts after 8 weeks compared with the previous 13.

Having indicated the goals, I shall describe briefly some of the procedures we used to reach them.

In the light of our experience, not much *sustained* progress can be made until the emphasis on timeliness has become firmly entrenched in the attitudes and practices of the personnel of the statistical office. This we describe in the paper as the problem of producing a "timeliness presence". This, we found, is difficult to

achieve, in part because those involved in producing statistics have to cope with a wide range of problems and pressures, ranging from administrative and operational problems to problems associated with user needs and supplier requirements. In these cross-currents, the issue of timeliness had tended to become submerged and to be treated as a residual. It also appears to be the case that statisticians who would be distressed to have to publish data they consider too inaccurate for the uses they are intended to serve tend to take a more tolerant attitude to lateness in publication. Moreover, in some sections of Statistics Canada, an accounting approach to accuracy was in evidence, whereby relatively small adjustments arising from additional coverage delayed the release of the results, without due regard to other sources of error, or to the cost in terms of timeliness forgone.

To help establish the timeliness presence, we have endeavoured to replace the accounting approach with a guideline expressed by the following question: "If the information already in hand were to be published, would it throw more light on a situation, for which decisions are being made anyway, than if the information is withheld until coverage is more complete? " Clearly, no unequivocal answer can be given to this question. Nevertheless, we found that it can serve as a meaningful point of departure for considering different cut-off dates. It also focuses the issue in a way that tends to affect attitudes about timeliness as a major goal of the statistical office.

To implant the timeliness presence, the goal of achieving prompt release of data of acceptable quality must be established as a top priority one and be given the most senior sponsorship. Having defined the goals in specific and realistic terms, no diversion from it can be permitted – barring, of course, factors beyond one's control, such as postal strikes. It is also desirable to make public commitments that these goals will be met within specified time periods. Such commitments strengthen the credibility among the staff that it is the intention of management to do everything possible so that the goals are met.

Moreover, we have found it necessary to overcome initial reactions of some supervisors that a drive for improving timeliness, through adding further pressures, would affect adversely the morale of the staff. As a matter of fact, our timeliness drive has had the opposite effect – the morale of the staff improved. Contributing to this was the fact that we involved the clerical as well as the professional staff in fulfilling the timeliness objectives. Morale rises – and so does the quality of the work and hence the statistics – as clerical and other ranks are imbued with an awareness that the results of their efforts are not only wanted but wanted with impatience. Strategies for improving on previous months' targets can be planned jointly with the staff: a degree of healthy competition between sections can be installed. When important gains are achieved, this should be publicized and duly acknowledged by senior management. We have attempted to do these things.

Of great importance in achieving the timeliness goals is, of course, the respondent. He too must be imbued with the timeliness presence. We have attempted, through publicity and personal interviews, to make respondents fully aware of our timeliness goals and the vital role they play in achieving them. Furthermore, we have made determined efforts to locate the person in the responding organization who is actually responsible for filling our questionnaires, in order to be able to contact him directly and quickly when necessary. In the case of series based on skewed distributions, it is necessary to establish a list of "must" respondents, that is to say, respondents whose returns must be in before earlier cut-offs are practical. These are usually the large respondents and those whose activities tend to be volatile so that imputation for them is difficult. Personal visits, as well as the telephone, are usually required to achieve the right results.

All the efforts outlined above can only result in frustration if time-wasting bottlenecks occur in the internal production flow – in typing, in the computer center, in printing, etc. In the case of Statistics Canada, one of the first steps in planning the timeliness program was to establish a set of time schedules in the areas selected for immediate timeliness attention. These schedules indicated the time intervals involved in each link in the production chain and were used to minimize bottlenecks. In some areas, notably trade statistics, a basic reorganization in the methods of processing the primary material was involved.

Quite a bit of progress in timeliness, without loss in quality, can be achieved with management devices such as just described. Furthermore, before any serious trade-offs between timeliness and quality have to be faced, the research instigated by a timeliness program can develop ways and means of quickening output without impairing the results. In the first place, more can be done by way of producing monthly indicators, where previously only quarterly or annual data were available. Thus Statistics Canada, following a lengthy period of research and experimentation, began last year publishing monthly indexes of gross domestic product by industry which earlier had been available only quarterly.

Secondly, effective methodological shortcuts and improved imputation procedures can be spurred by a timeliness program. Thus, improvements in imputation procedures in the Statistics Canada monthly employment and payroll statistics, triggered by the drive for timeliness, have helped to give rise to estimates of comparable if not better accuracy, despite earlier cut-offs. The introduction of sampling of documents containing small values has enabled us to accelerate our import statistics considerably and, at the same time, to improve their quality.

Sensitivity about the reliability of the statistics tends to be heightened by a timeliness program. This is conducive to inconsistencies being pursued with vigour and corrected. In order to minimize the risks involved in issuing earlier information the statistician is stimulated to carry out more intensive analyses which, in turn, lead to a better appreciation of the characteristics

of the primary data and ultimately to their improvement.

We judge that, to date, most of our timeliness gains have been made through the various procedures just described so that the gains in timeliness were not accompanied by an overall deterioration in their quality, that is to say, we believe that the earlier data are of comparable quality to those published previously. However, these gains did not come entirely free – they involved some commitment of scarce skilled resources to accommodate the needs of the timeliness program.

This was particularly so in the case of the quarterly national accounts. Because of their great importance for policy analysis, we undertook an intensive review of the primary information flow. This review suggested that, partly as a result of the timeliness gains in the primary data, a time lag of six to eight weeks was reasonable and that these early estimates should, on the whole, be comparable in quality with the preliminary estimates of the quarterly accounts preceding the timeliness drive.

In addition, we made an analysis of two estimates for the same quarter – one, for use as a "dry run" only, after six and one-half weeks following the reference quarter; and again after 13 weeks for regular publication. Resource and other constraints made it impracticable to carry out this double estimating procedure for more than one quarter. Hence, we could only examine the level of the two estimates rather than the change. The latter would, of course, have been more relevant. Keeping in mind this limitation, the analysis of the two estimates, in the light of the historical record of revisions, again suggested that early publication was warranted. We decided, in the end, to lengthen the time interval of the early estimates from six and one-half to eight weeks after the reference quarter, to provide some insurance.

More definitive appraisals than have been possible to date of what, if any, loss in overall quality the earlier quarterly accounts and the other series entail will have to await further feedback from users and the cumulation of additional estimates and revisions. We are aware, however, of the fact that it is extremely difficult to isolate the effect of better timeliness on the estimates and revisions from all other factors affecting them. This is particularly true in Statistics Canada because, simultaneously with the program for the acceleration of the data, we initiated programs for extensive automation of a number of our surveys and the tapping of new or improved data sources. These programs are, of course, also conducive to changes in the estimates and revisions.

As I indicated before, our timeliness goals during the first two years were to speed up the release of the indexes of production, the quarterly accounts, and numerous other current economic statistics. We actually took about two and one-half years to accomplish this. We were hoping that our limited gains would have a general beneficial impact on timeliness elsewhere in Statistics Canada. In fact, little overall gain in the timeliness of our annual data was evident. In a few cases, a deterioration of timeliness of some quarterly series, not specifically included in the accelerated program, appeared. It became clear that, to extend the limited gains we have achieved, through the improved management and research devices outlined, to the broad range of Statistics Canada output, a more comprehensive program of production improvement was called for.

Accordingly, we decided to call in an expert group from the Bureau of Management Consulting of the Government of Canada, to work with a Statistics Canada team, to develop a well-defined system of production planning, scheduling and control. This group made a detailed review of our production procedures and problems. Their report, completed recently, contains comprehensive recommendations which we have begun to implement. More particularly, we are taking steps to establish in Statistics Canada a central production planning and control group whose function will include forward planning, monitoring and control of the work flow, in collaboration with the subject matter divisions. In this way, we expect that the momentum of our timeliness program will proceed in a comprehensive and systematic manner.

In conclusion, it is only fair to add that, although I have referred to our timeliness gains to date as limited, we take some pride in having achieved them. Aside from providing earlier data of comparable quality for an important range of current economic intelligence, the timeliness program I have described has been instrumental in establishing the timeliness objective as an integral and vivid element in our total operations. We were fortunate in having been able to assign to this program a number of competent people who were not only themselves fully dedicated to the timeliness program but had the talent for inspiring others in our organization to devote themselves to this task with vigour.

I wish to express, also, our gratitude to our colleagues in the United States who have permitted us to study their timeliness experience and problems with characteristic generosity and openness. This has helped us, especially in the early planning stages, to formulate realistic goals.

Ambitions with regard to timeliness improvement should be pushed to the point where further benefits from improved timeliness are outweighed by a loss in quality as reflected in larger revisions. The first task of those charged with managing a timeliness improvement program is to determine how far the system can be pushed to produce data more quickly without a loss of quality. This is essentially a management problem of optimum resource allocation and resource use although a good deal of research spawned by a timeliness program can contribute to its resolution. The second task is to be able to appraise any loss in accuracy, at least qualitatively, if and when it arises so that reasoned decisions can be taken as to its advisability. The Statistics Canada experience during the past few years suggests that the determined pursuit of these efforts can yield fruitful rewards.

However, it bears emphasizing that both timeliness and quality improvement are *moving* targets. As the user gets accustomed to prompter data, he typically wishes still earlier information. At the same time, the computer has made it possible for users to manipulate quickly much larger quantities of detailed data, and this requires increasing attention to their quality. Thus it is essential to establish ongoing research programs designed to quicken further the output while at the same time protecting or improving accuracy. This is the direction in which we are proceeding in Statistics Canada.

NEW PROJECTS

New Monthly Communication Survey

Telephone statistics are now collected on a monthly basis by the Transportation and Public Utilities Division of Statistics Canada. Previously, statistics on the telephone industry were collected only on an annual basis.

The monthly survey provides data on operating revenue and expenses, employees, salaries and wages, construction expenditures, number of telephones and number of telephone toll messages for this billion-dollar segment of the communications industry. Survey results are published in the *Communications Service Bulletin* (catalogue number 56-001).

Telephone companies participating in this survey are the fourteen members of the Telephone Association of Canada.
Inquiries should be directed to Mr. J.R. Slattery, Transportation and Public Utilities Division, Statistics Canada, Ottawa, K1A 0T6.

Provincial Accounts for Alberta

A system of provincial accounts is currently being developed by Mr. B. Klippenstein of the Alberta Bureau of Statistics. This program was initiated in 1969 under the direction of B. Gustafson. Publication of material resulting from the current program is not expected for at least two to three years. The concepts and format used for the Alberta series will parallel as closely as possible the system of national accounts. Where Statistics Canada data are not broken down or are felt to be inadequate for provincial purposes, alternative sources of information will be developed. This may require the development of surveys of provincial information sources by the Alberta Bureau of Statistics.
For more information on this project, contact the Alberta Bureau of Statistics, Rm. 1529, Centennial Building, Edmonton 15, Alberta.

PROJECT PROGRESS REPORTS

Job Vacancy Data Released in November

The Labour Division of Statistics Canada has been conducting monthly sample surveys covering all sectors of the Canadian economy, except agriculture and households, to obtain information on the number of job vacancies. First results of these surveys were expected to be released in November 1971.

The survey's main function is to provide a measure of the *demand* for labour in Canada. This information will become an important tool in economic analysis, especially when used in conjunction with the labour force survey's measure of the labour supply. Job vacancy data will be useful to business and industry in making plans for recruitment and training; to governments in formulating immigration policies and planning retraining and other educational programs; and to individuals in determining career plans or considering job changes.

For purposes of the survey, job vacancies are defined as:

- unfilled jobs at any occupational level which have existed for at least the full reference day shown on the questionnaire.
- only those jobs that are available to workers outside the firm.
- only those vacancies that the firm has been actively seeking to fill within the four weeks preceding the reference day.
- jobs available immediately or at some *specified* future date.

They will not be considered vacancies if they are:

- held open for laid-off workers.
- held open for employees on special leave.
- created through an industrial dispute.
- to be filled from within the firm.
- jobs for which new workers have been hired but are scheduled to start work at a later date.

Data gathered in the surveys will be published in *Monthly Report on Job Vacancies,* a joint publication of Statistics Canada and the Department of Manpower and Immigration. The first report will contain monthly data, for the period from June 1970 to July 1971, on vacancies by duration, by industry and by region. Included in this first issue will be a technical section (The Canadian Job Vacancy Survey: Technical Appendix) giving a detailed description of the survey, with notes on the concepts and methodology.
More information about the Job Vacancy Survey is available from the Job Vacancy Section, Labour Division, Economic Statistics Branch, Statistics Canada, Ottawa, K1A 0V3.

Farm Input Price Indexes

A new set of farm input price indexes has been constructed by the Prices Division of Statistics Canada, following a comprehensive revision of index weights and price samples. This new series is on a 1961 time base. Quarterly and annual indexes for the period from 1961 to the third quarter of 1971 inclusive will be published in the September issue of *Prices and Price Indexes* (catalogue number 62-002). A description of concepts, the weighting diagram, and index methodology will be included. (This description will also be published separately as a technical paper, catalogue number 62-534.) Current indexes will be available in *Prices and Price Indexes* and in the quarterly

publication, *Farm Input Price Indexes, 1961 =100* (catalogue number 62-004).

The basket of goods and services (the weighting diagram) for the revised price indexes is based on information from the 1958 Farm Income and Expenditure Survey, the most recent source of sufficiently detailed data. The 1958 data have been modified to reflect 1961 prices and conditions.

The Farm Input Price Indexes (1961=100) replaces one of the two major component indexes in the previously published series, *Price Index Numbers of Commodities and Services Used by Farmers (1935-39=100).* The latter index, which was suspended early in 1970, was composed of a Farm Family Living Index and a Composite Index Exclusive of Living Component. The new Farm Input Price Indexes replaces the Composite Index Exclusive of Living Component from 1961. The Farm Family Living Index has not been revised at this time and publication remains suspended.

More information on this subject is available from R.T. Richards, Prices Division, Economic Statistics Branch, Statistics Canada, Ottawa, K1A 0T6.

Statistical Developments in the Provinces

Within each provincial government in Canada, there is one office or agency which represents the province at meetings of the Federal-Provincial Conference on Economic Statistics and often at other statistical meetings as well, and whose function it is to perform, to various degrees, the duties of a central or co-ordinating statistical agency. There have been some recent developments concerning the operations of, or legislation governing, these "focal points". The following is a brief listing of these offices and a summary of these developments.

Newfoundland – The Government of Newfoundland and Labrador passed an Order-in-Council in 1971 establishing the Fiscal Policy Division of the Treasury Board as the statistical "focal point" for the province. Consideration is being given to the drafting of new provincial statistics legislation.

Prince Edward Island – The "focal point" for P.E.I. statistical activity is the Office of the Secretary, Treasury Board. The Province does not have a specific Statistics Act at present.

Nova Scotia – In April 1971, the Legislative Assembly of Nova Scotia passed a new Statistics Act. The provincial act makes provision for a statistical agency which is intended to be in the new Department of Development. Until the new agency is set up, the Economics and Development Division of the Department of Development is Nova Scotia's statistical "focal point".

New Brunswick – This province does not have a Statistics Act or agency at present. The Director of Research in the Office of the Economic Advisor acts as a co-ordinator for statistical matters.

Quebec – The Quebec Bureau of Statistics in the Department of Industry and Commerce is the long-established and large central statistics agency for the province and it operates under a Statistics Act.

Ontario – The Economic and Statistical Services Division of the Department of Treasury and Economics is responsible for co-ordinating statistical activities. The Ontario Statistical Centre, which reports to the Executive Director of the Division, operates under a Statistics Act.

Manitoba – A Statistics Act was passed by the Manitoba legislature in August 1971. The Act provides for the establishment of an agency. Until the agency is operative, the statistical "focal point" for the province is the Secretary, Economic Development Advisory Board.

Saskatchewan – This province does not have a Statistics Act, but the Director of Federal-Provincial Relations, Budget Bureau, Department of Treasury, acts as a general statistical "focal point".

Alberta – The Alberta Bureau of Statistics, Department of Industry and Tourism, operates under a Statistics Act and is the general statistical center for the Province.

British Columbia – In this province, the statistical "focal point" is the Economics and Statistics Branch of the Department of Industrial Development, Trade and Commerce. The Branch operates under a departmental act which is also a Statistics Act.

The Statistical Observer is considering publishing a detailed description of each province's statistical activities and the organizational structure under which these activities are carried out. Would this information be useful to you? Please send your comments to M.A. Norman, Editor, Statistical Observer, Statistics Use and Information Services Division, Statistics Canada, Ottawa, K1A 0T6.

International Association for Research in Income and Wealth

The twelfth meeting of the IARIW was held in Ronneby, Sweden, from August 30 to September 4, 1971. The following report is a description of the association and an account of the 1971 meetings.

The International Association for Research in Income and Wealth is a private independent organization, founded in 1947, for the purpose of research into concepts, frameworks, data and empirical analysis relating to the flows of income, income size distribution and the nature and distribution of wealth. Also included in the area of interest of the Association are such fields of study as price indexes, productivity, conditions of human welfare and efforts to measure the so-called quality of life. Its membership consists of leading economists and statisticians in the areas of interest described above and encompasses persons engaged in academic work in universities and private research foundations as well as those employed by governments.

The membership of the Association is world-wide, although a large proportion is drawn from European countries with the North American continent also having a substantial representation. The Association meets every two years and, with the exception of the eleventh meeting which took place in Israel, all the meetings have been held in Europe. The meetings are usually held in some secluded location where the members can form a working group for the full week of the meeting. Intensive discussion and intellectual stimulation thus takes place, not only at the official sessions, but also in informal exchanges outside the conference room. The papers are generally organized around three or four principal topics and are introduced by invited discussants who provide brief resumés of the papers as well as their own critique. The authors are free to join the general discussion of their papers and are given the opportunity for a final comment or rebuttal.

Until 1962, the Association was largely financed by the Rockefeller and Nuffield Foundations, and membership in the Association was by invitation and without charge. Since 1962, major financial support has been provided by the Yale Economic Growth Center, and it was the prospective termination of this support by 1971 which, in 1965, prompted a fundamental change in the organization of the Association. Considerable difficulty and delays had resulted from the practice of publishing papers in book form, and it was decided to institute a quarterly academic journal, *The Review of Income and Wealth,* which would be the vehicle for papers delivered at meetings of the Association as well as others in its field of interest, and from the sale of which some revenue would also result. In addition, membership fees were instituted, although these also include a subscription to the journal. As a replacement for the financial support of the Yale Economic Growth Center, the Association is seeking to develop a broad base of institutional membership, largely among governments, and the approaches so far have produced encouraging results. At present, there are approximately 250 individual members of whom about 150 attended the meeting in Sweden, and it is proposed to increase this number to about 300 during the next two years. The Association is governed by a Council which determines the topics for conferences, the selection of organizers for sessions, the appointment of the editors of *The Review of Income and Wealth,* and the general policies and administration of the Association. Dr. S.A. Goldberg, Assistant Chief Statistician of Canada, has just completed a two-year term as Chairman of the Council, and his successor is Mr. Z. Kennessey of the U.N. Statistical Office. The Secretary of the Association is Professor Nancy D. Ruggles of Yale University.

The Meeting in Sweden

The 1971 meeting in Sweden consisted of four sessions. Approximately 50 papers were discussed. These papers cannot be individually summarized in a brief article, but an attempt is made below to describe some of the main arguments presented and the points brought out in the discussions. The summary will deal only with the first three sessions, namely, those on systems of socio-demographic accounts and social indicators; on total factor input and productivity; and on international price comparisons. The fourth session, which consisted of contributed papers, was typically too heterogeneous to lend itself to any unified treatment.

The papers and discussion on systems of socio-demographic statistics and social indicators arose from three broad types of questions which have been of concern to economists and statisticians working in the fields of income and wealth during the last few years. There has been some success, albeit still fraught with many shortcomings, in measuring in an aggregative, integrated and purposeful manner those phenomena of production, expenditure and wealth which pass through the market (or quasi-markets) and which have become embodied in the general system of national accounts. The question arose whether a parallel methodology could not be applied to social and demographic statistics to integrate them into an overall system which would provide a broader capability for dealing with the totality of social problems.

Two broad approaches seem to be emerging on this question. One is directed to the creation of structured socio-demographic models within which the variables can be analyzed by econometric and other formal techniques. The second is concerned with the development of a capability by which disaggregated data bearing on related phenomena can be brought together as so-called micro-data sets to permit the searching analysis of particular problems. The essence of such a system is its flexibility and capacity for speedy response. This imposes very exacting requirements on the elements of the various data files which must be uniformly described and classified and conceptually consistent. It also presupposes sophisticated computer technology for the required storage and retrieval capability.

The second broad concern in the first session was the growing realization by economists and statisticians as well as the general

public that the measurement of growth and production, as reflected in the system of national accounts, takes no account of the *social desirability* of the goods and services concerned – whatever this term might mean. There is a vast range of goods and services which no doubt contribute to an increase in the general quality of life and the enjoyment of intellectual and material benefits. On the other hand, there are products and services which may be somewhat less socially desirable. In addition, there are external costs such as pollution and congestion which are created by the very act of producing those things which we all desire. How to measure these aspects of economic activity, and how and whether they should be integrated into the system of statistics which reflects mainly the mechanics of the market place, are extremely complex problems.

The second session of the meeting at Ronneby dealt with problems of the relationships of total factor inputs and outputs, that is, total factor productivity. In the past, many productivity studies have restricted themselves to analyzing the relationship between real product and the corresponding labour input. Somewhat less emphasis was given to the contribution of capital – largely because of data difficulties – either in its own right or in conjunction with labour inputs. This session devoted a good deal of attention to the combination of these factors in creating output and a number of very interesting empirical studies were presented. The session, however, went much further than this and presented a number of path-breaking developments. The first was an attempt to develop a fairly detailed system of classification of growth determinants. Such a classification would have very significant potential for analytical and diagnostic studies of the causes of growth and will probably also contribute to the understanding of international comparability, which was the topic of the third session.

The third type of question arises from the increasing concern as to whether the forces of growth and change are being effectively harnessed toward the goals of society. The problem is of course aggravated by an ambiguity as to what the goals are or should be. It is a pervasive problem, which is dramatized by the continuing growth in the spending program of governments. There is general recognition of the need for the analysis and evaluation of the effectiveness of these expenditures, and this has led to a search for a system of quantitative indicators for monitoring the ultimate social conditions which the expenditures are designed to influence. The research underlying the developments of these quantitative indicators is often referred to as the social indicators movement, and the session provided a useful summary of the state of this as yet relatively undeveloped art as well as pointing to some promising lines of future development.

The second session was the pivotal session of the whole meeting because it also provided very strong linkages with the preceding session through the notion of measuring, as a contributing element to economic growth, not only the conventional concept of capital investment, but also society's investment in human capital, including the costs of rearing children, educational outlays, relocation costs etc. It seems clear that, if these aspects of the human condition can be related to productivity and growth, a major gap between socio-demographic and economic factors can be closed. This question was considered so important by the meeting that it will constitute the subject of a complete session at the next IARIW meeting to be held in Budapest in 1973.

The third session may be said to have been of a somewhat more pragmatic nature than the two preceding sessions. It was concerned mainly with a description and progress report of the effort to achieve international price comparability in the measurement of GNP and related totals. A major effort toward international price comparability has been initiated under U.N. auspices at the University of Pennsylvania. This undertaking is designed to review, expand and carry forward, on a world-wide basis, work of this nature which took place in the late 1950's in the OECD with respect to several of its member countries. This is a technically very difficult problem, the solution of which is likely to be expensive in terms of human and financial resources. In an attempt to reduce this difficulty, a good part of the discussion was addressed to the feasibility of shortcut methods to achieve similar aims. It is obvious, however, that a really meaningful evaluation and testing of the validity of the various so-called shortcut methods must await the completion of and comparison with full-scale studies. This is still some time away.

This report was contributed by H.J. Adler, Senior Advisor on Integration, and D.A. Worton, Director, Central Planning and Programming Staff, Statistics Canada, Ottawa, K1A 0T6.

Workshop on Chemical Statistics

A new development in the continuing process of liaison between Statistics Canada and the users and providers of statistics was the workshop co-sponsored by the Canadian Chemical Producers Association and the bureau. "Statistics for the Chemical Industry" was the name of the two-day session held in Ottawa, May 19 and 20, 1972, to foster "communication, understanding and co-operation" between the CCPA and Statistics Canada.

The meetings were attended by more than 60 representatives of the chemical manufacturers. Many divisions of Statistics Canada participated – Manufacturing and Primary Industries, Central Classification, Agriculture, Prices, External Trade, CALURA, Labour, and National Output and Productivity.

The workshop was opened by W.E. Duffett, Chief Statistician of Canada, who pointed out the importance of the opportunities provided by meetings of this type for Statistics Canada and the chemical industry to learn of each other's needs. V.R. Berlinguette, Director General of the Economic Statistics Branch, gave the meeting a detailed introduction to Statistics Canada, describing the organization and some of the major concepts and standards that the bureau uses and some of the issues faced by the bureau in fulfilling its role. The next three speakers, G.W. Andrews, Director, Manufacturing and Primary Industries Division, D.A. Traquair, Director, Business Finance Division,

and W.L. Porteous, Director, Agriculture Division, outlined the specific activities of Statistics Canada pertaining to statistics for the chemical industry.

For the first "workshop" session, delegates were divided into small groups, with some "data users" and some "data providers" in each group, to discuss and enumerate the problems that the industry has had in dealing with Statistics Canada. This session was followed by a panel discussion on the problems that Statistics Canada has had in dealing with the chemical industry.

There were seven subject matter workshops devoted to specific areas of activity in chemical statistics. The topics discussed were classification and survey methods, production and consumption, employment and wages, prices, external trade, general economics, and financial statistics. Each of these sessions was co-chaired by a Statistics Canada subject matter specialist and a CCPA representative.

As a result of this meeting, the Statistics and Information Committee of the CCPA has set up subcommittees, one to deal with each subject matter area discussed, to pursue those issues arising from the workshop.

First Canadian Conference in Applied Statistics

Industry, government and universities were represented at "Statistics '71 Canada", the first Canadian conference in applied statistics, held in Montreal from May 31 to June 2, 1971.

The objectives of the conference were:

(1) to facilitate the exchange of ideas and experiences among Canadian statisticians, and thereby to make statisticians more aware of the scope of statistical activity in Canada;
(2) to emphasize the contribution of statistics and the statistical profession in the Canadian context;
(3) to explore the needs of the business, government and academic communities for statisticians and statistical information; and
(4) to provide the basis and initial momentum toward the development of a Canadian statistical organization and a professional journal of statistics in Canada.

Topics of the more than 50 papers presented to the conference ranged from discussions of the uses of statistics in management and education to descriptions of new concepts and techniques in statistical methodology.

Many Statistics Canada staff members took part in the conference. T. Gigantes of the Economic Statistics Branch participated in a panel discussion on the "Misuse of Statistics in Public Media, Business, Industry and Governments". A. Sunter of the Methodology and Systems Branch gave a paper entitled "Some Special Problems of Business Surveys". The subject "Variance Components and Variance Functions" was discussed by G. Gray, also of the Statistics Canada Methodology and Systems Branch. A. Ashraf, R. Platek and P. Timmons of the same branch presented a paper on "Some Methodological Aspects of the 1971 Canadian Travel Survey".

The proceedings of this conference will be published by the Sir George Williams University Press in 1972.

NEW REPORTS

Income Statistics

The Consumer Finance Research Staff is continuing its publication program of the data collected in the survey of Consumer Finances taken in the Spring of 1968. The basic statistical report, *Income Distributions by Size in Canada, 1967* (catalogue number 12-534), was released in January 1971, and reports on special topics are being published now.

Statistics on Low Income in Canada, 1967 (catalogue number 13-536), was released in June 1971. According to the estimates in this report, 39 per cent of unattached individuals and 18 per cent of families had incomes in 1967 below the low income cut-off levels. (These cut-off points are the limits established to analyze the 1961 Census data, adjusted for the increase in the Consumer Price Index.)

The 832,000 families in the low-income category comprise approximately 3.3 million persons of whom 1.4 million were children less than 16 years old. In 1967, 37 per cent of these families reported that the family head worked on a full-time basis all year. Average family income for this group was $2,615, and average family size was 4.6 persons of whom 2.3 were children. Forty-five per cent of all low-income families lived in rural areas, but almost 18 per cent lived in large metropolitan areas with populations of more than 500,000.

In addition to the low-income families, 582,000 unattached individuals (221,000 males and 361,000 females) had incomes less than $1,740 – the low income cut-off for one-person units in 1967. Almost half of these individuals were elderly, with a particularly high proportion of women over 65 in the group. Most unattached individuals with low incomes resided in urban areas: only 19 per cent lived in rural areas.

Data published in *Earnings and Work Experience of the 1967 Labour Force* (catalogue number 13-535), also released in June 1971, showed that the 1967 average earnings of full-time male workers were $6,415, almost double the average earnings of $3,746 for female full-time workers. (Full-time workers are those who worked for 50 to 52 weeks, mostly on a full-time basis.) Eight per cent of *all* male workers earned $10,000 or more in 1967, but only .4 per cent of females reported earnings in this bracket.

Comparison with earnings data of 1961 indicates that family incomes in 1967 were less dependent on the earnings of the family head than in 1961. Thirty-three per cent of the total average family income was contributed by other family members in 1967 compared with 20 per cent in 1961.

Family Incomes (Census Families), 1967 (catalogue number 13-538), will be released shortly. This report contains the only published data available since 1961 on the income distributions for the family as it is defined in the Canadian Censuses. A Census family consists only of parent(s) and never-married children; whereas, the "economic family" – the definition used in the income distribution statistics compiled from the Surveys of Consumer Finances – includes other relatives living in the same dwelling.

Average family income for Census families in 1967 was estimated at $7,366, slightly less than the average income of $7,602 for families as defined by the Survey of Consumer Finances.

The two million people who were excluded from the Census definition of a family had an average income of $2,959 in 1967. In comparision, the average income of the 1.5 million unattached individuals (those who did not share a household with relatives) was $3,257.

Substantial real income gains accrued to Canadians between 1965 and 1967, according to data published in *Comparative Income Distributions, 1965-1967.* This report (catalogue number 13-539), which is expected to be released soon, shows that average family income (in 1961 constant dollars) increased from $6,091 to $6,591 between 1965 and 1967. The proportion of families with incomes of less than $3,000 (1961 dollars) decreased from 5.7 per cent in 1965 to 4.6 per cent in 1967; whereas, the proportion of families receiving more than $10,000 rose from 25 per cent to 31 per cent during the same period.

However, the inequality of income distribution remained largely unchanged as illustrated by the fact that the share of the total income received by families in the lowest quintile of the income distribution was 6.2 per cent in 1965 and increased only slightly to 6.4 per cent in 1967. Similiarly, the income share received by families in the highest one-fifth of the income distribution changed by only one-tenth of a percentage point – from 39.0 to 38.9 per cent.

Inquiries about these reports may be directed to Mr. B. Mazikins, Assistant Chief, Household Surveys, Consumer Finance Research Staff, Statistics Canada, Ottawa, K1A 0T6.

Background for U.S. National Accounts

United States national income statistics have undergone a great transformation during the last two decades. A recent publication of the United States Department of Commerce, *Concepts and Methods of National Income Statistics,* is a collection of articles giving an historical view of this transformation. These articles, reprinted from various sources, describe the basic conceptual structure of national income and productivity statistics and show the changes that have occured since 1954, both in the basic concepts and in the statistical methodology and procedures used to produce the statistics.

Concepts and Methods of National Income Statistics, United States Department of Commerce. Available from the National Technical Information Service, Springfield, Virginia, U.S.A. 22151.

Economic Statistics for Ontario

The 1971 issue of the *Ontario Statistical Review,* an annual reference publication supplementing the bi-monthly *Ontario Economic Review,* was released in July. Its purpose is to provide an historical perspective for the economic indicators in the *Ontario Economic Review,* and to bring together a wide range of information about Ontario's economy.

The report is divided into four sections. The first section presents a series of economic indicators covering the 1949-70 period. Part two contains the three basic tables for Ontario's input-output model. In the third section, selected regional economic measurements are presented, covering the province's ten development regions and their major urban centers. The last part of the report contains annual estimates of the major components of the Ontario Gross Provincial Product for the period 1957 to 1969.

Ontario Statistical Review, Economic Analysis Branch, Economic and Statistical Services Division, Department of Treasury and Economics, Frost Building, Queen's Park, Toronto 182, Ontario.

Design for Decision-Making

The *Eighth Annual Review* of the Economic Council of Canada focuses on the processes of government decision-making with particular emphasis on human resources policies.

The first part of this Review discusses briefly the increasing role of government. Then, the major aspects of government decision-making processes, and possible ways to improve them, are examined. In the third section, the authors illustrate these processes, and possible improvements, with reference to the main programs of federal manpower policy: training, mobility, job placement, etc. The decision-making processes of provincial governments are examined using as an example educational policies and programs. The final chapter of the Review sets out some conclusions about government decision-making.

Copies of the Economic Council of Canada Eighth Annual Review, September 1971, Design for Decision-Making, catalogue number EC21-1/1971 are available from Information Canada, Ottawa, and Information Canada book stores, for $3.00.

OECD Study of Output

During the last two decades, the economies of most of the countries of the world have grown steadily and at unprecedented rates. A recent study by the Organisation for Economic Co-operation and Development, titled *The Growth of Output, 1960-1980,* analyzes this growth rate and gives projections for the supply during the next decade. The publication also examines demand management policies in relation to growth, as well as other aspects of economic policy relevant to the increase in, and most efficient use of, supply.

The special aspects of growth in developing countries are illustrated by a review of the performance, prospects and problems in four OECD member countries (Greece, Spain, Portugal and Turkey).

The final section of the report formulates the conclusions of the study and discusses problems for future analysis.

The Growth of Output, 1960-1980, Retrospect, Prospect and Problems of Policy, December 1970, Organisation for Economic Co-operation and Development, France, catalogue number 1170021. Available in Canada from Information Canada, Ottawa. Price: $8.75.

ANNOUNCEMENTS

Two Economic Accounts Branch Officials Working with International Organizations

Mr. D.K. McAlister, Chief of the Balance of Payments Section of the Balance of Payments and Financial Flows Division, was invited to participate in the revision of the third edition of the *Balance of Payments Manual* prepared by the International Monetary Fund. The purpose of the Manual is to guide member countries in the construction of balance of payments accounts. The Manual provides a standard for compiling statistical series that can be conveniently compared both from country to country and with related series prepared in conformity with other international standards. It is not intended to enforce standardized recording of balance of payments where the character and relative importance of items for any individual country indicate otherwise, but the Manual does provide guides to definitions, coverage and concepts.

Mr. W. Mackness, Chief of the Financial Flows Section of the same Statistics Canada Division attended the tenth meeting of the Organisation for Economic Co-operation and Development (OECD) Ad Hoc Group of Financial Statisticians in June 1971. The group has compiled a set of comparable member country financial statistics, including financial flows, interest rates and security issues, which the OECD is now publishing. The group is now considering extensions to the published series to cover financial statistics of non-financial corporations, financial institutions and rest of the world sector within the financial flows framework.

Appointments

C.D.P. Bernier, formerly Chief of the Provincial Government Section of the Governments Division, Financial Statistics Branch, was promoted to Assistant Director and Chief of the Consolidation and Co-ordination Section of the same division.

D.R. Buchanan has been appointed to the position of Survey Integration Co-ordinator, Economic Statistics Branch. One of his major functions will be a study of the extent of duplication in industrial surveys. Mr. Buchanan was formerly with the Statistics Canada Labour Division.

E.A. La.S. Fisher has resigned from his position as Co-ordinator of Systems and Development in the Education Division and is now working with UNESCO in Paris.

Ross Grenier is the new Co-ordinator of Systems and Development in the Education Division of the Socio-Economic Statistics Branch. Mr. Grenier was formerly Associate Registrar (Records and Scheduling) at the University of Waterloo.

P. Hicks, has been named Assistant Director, Labour Market Statistics, in Labour Division of the Economic Statistics Branch. Mr. Hicks is continuing to carry out the duties of his former position as Chief of the Labour Force Survey Section.

K. Holt was appointed to the position of Assistant Director, Subject-Matter and Research, Judicial Division. Mr. Holt was formerly Head of Integration and Analysis in the Judicial Division, Socio-Economic Statistics Branch.

G. Labossière is now Director General, Administration, for Statistics Canada. In this position, he has responsibility for personnel, finance, administration, accommodation, the bilingual program and management consulting services.

P. Legaré has joined the Statistics Use and Information Services Division as the Statistics Use Development Officer for the Montreal Region. Prior to this appointment, Mr. Legaré worked in economic research for the Private Planning Association and Canadian Pacific.

B. Lynch has been appointed to the position of Assistant Director, Employment, Payrolls and Pension Statistics, Labour Division. Prior to this appointment, Mr. Lynch was Assistant to Mr. V. Berlinguette, Director General, Economic Statistics Branch.

W.C. MacIver has been appointed Director of Statistics Canada's Financial and Administrative Services.

C. Pless has joined the Integration and Development Section of CALURA. Mr. Pless was formerly with the Essex Jewelry Co. Ltd. in Montreal.

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STATISTICAL OBSERVER

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STATISTICAL OBSERVER

VOLUME 4 / NUMBER 4 / JANUARY 1972

The Statistical Observer is designed to contribute toward informing economists, statisticians and related professionals throughout Canada about selected statistical and research developments undertaken in Statistics Canada, in other federal departments and agencies, in provincial departments, in universities and in business and independent research organizations.

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The Computer and Government Statistics

Technological barriers to the effective realization of many of the overly enthusiastic pronouncements of the sixties regarding the use of the computer are being removed, and the cost of hardware is actually declining. Yet one can sense in the literature on computer use a tendency toward greater caution. This tendency is presumably the result of the failure of many automation projects to fully realize their promised goals, and to complete their implementation within anything like their scheduled times. The present paper *(2)* is an attempt to present some views on automation in the light of the recent experience in Statistics Canada.

We shall concentrate here on problems associated with the automation in a statistical office. In so doing it is our intention to promote the cause of automation rather than to inhibit it. By identifying problems and facing them squarely we should be able to cope with them more effectively.

Some Reflections on the Goals of a Statistical Office and Automation

Clearly the goals of automation are derived from the goals of the statistical office which, in turn are derived from the goals of society. It is appropriate then to start with the question why should a statistical office aim to automate *(3)* its operations?

There are, of course, the usual considerations of increasing output per dollar spent and increasing output without a substantial growth in manpower, thus making the statistical office more efficient and effective. However, considerations of effectiveness become much more prominent when we consider the basic goals of society which should be reflected in the goals and programs of the statistical office. The goals of society are seldom defined unambiguously. The more recently formulated social goals have so far been articulated in most societies in very broad and vague terms, such as the elimination of poverty, abatement of pollution, a more egalitarian society in terms of income and asset distribution, etc. Precise definitions of these notions and measurable concepts are still to be worked out and a great deal of experimentation is involved, by users and producers of statistics alike. Thus, the statistical agency finds itself facing a multiplicity of goals, not fully defined in advance. For achieving these goals, the traditional cycle of statistical operations consisting of collection, processing and publication is becoming too inflexible. What is required, in addition, is the storage of the most detailed data and a capacity for retrieval of an almost infinite variety of unanticipated cross-classifications and aggregations, consistent with confidentiality requirements.

There is also a growing requirement to be able to interrelate data collected in a variety of surveys or through other sources. In fact, policies and programs are frequently interrelated so that the formulation of any single one must take into account its effect on the others. Broad approaches to the analysis of problems requires a great deal of detailed data and the most flexible retrieval capability facilitating their joint and interrelated use. The more widespread use of economic and social models based on a large number of equations and the development of simulation models designed to study the behaviour of persons, business and governments, as well as society as a whole, under alternative assumptions, clearly require massive data storage and quick and flexible retrieval capability, as well as an unprecedented level of data cleanliness (editing).

The preceding suggests the goals the statistical office should try to reach through automation, but the attainment of these goals is enormously difficult so that they are probably best regarded for the moment as merely indicating the *direction* in which the statistical office should strive to go. We can no more than hint here at the prerequisites for achieving the goals and at the immensely complex obstacles in the way, before turning to more *immediate* problems which must be coped with to carry forward successfully a practical program of automation.

First, as already suggested, the statistical office must develop facilities for storing the data collected in highly disaggregated form, (to be referred to as "microdata sets") and for retrieving quickly a large variety of unanticipated as well as anticipated tabulations. The storage of microdata has major implications for processing: the microdata must be particularly well edited, adjusted for non-response, weighted in the case of sampling, etc., and these operations must be carried out in relation to individual records. Thus statistical standards related to concepts, classification, edits and imputation must be much more rigorous than formerly when the statistical end products were, by comparison, much fewer in number, more highly aggregated and largely preconceived.

Second, statistical standards related to collection, (coverage, field work, etc.) must be tighter than previously to ensure that the large variety of detailed tabulations and cross-classifications will have predictable (and acceptable) margins of error. This means an increasing responsibility to follow up the non-respondents, probably involving a greater role for the field function, greater integration of follow-up procedures for different surveys which, in turn, necessitates careful scheduling and planning. Put differently, the integrity of the data must increasingly be assured during its collection and processing at the level of the individual observations since surveys can no longer be designed with a view to minimizing the error of a few predetermined aggregates only.

Third, the more data are accumulated in the statistical office, the more important it is for the statistical office to carry out analyses of the data in order to identify the relationships existing between the data derived from different surveys and other sources, with a view to providing users with information about the character, limitations and potentials of the data. The more data is available, the more important it is to standardize concepts, study and weed out inconsistencies, structure the data base in a coherent manner and, in general, to carry forward what is known as the function of statistical integration. In sum, the statistical office should strive to provide an analytical infor-

mation service, rather than just a data collection facility – a very challenging task.

The last problem to be mentioned here is that of privacy and confidentiality. Previous practices of publishing only predetermined aggregates lent themselves more easily to confidentiality checks, in contrast to the retrieval flexibility mentioned above. The latter carries with it dangers, which must be overcome, of inadventently disclosing confidential information. Moreover, the very process of storing individual returns in machine-readable form and building up facilities to interrelate them creates fears in the public mind in regard to their privacy. These fears must not be disregarded on the grounds that they are unfounded because statistical offices merely require individual observations as raw material to produce aggregations which remove identifiable events.

Some of these points are discussed later and we now turn to the first of our immediate practical problems with regard to automation, namely, data problems.

Data Problems

At the heart of most automated survey processing systems is a subsystem to accomplish the editing of individual returns, their correction and the imputation for non-respondents. The proper use of the edit and imputation subsystem in an automated survey is vital to overcoming many of the data problems involved in using flexible retrieval systems. However, this subsystem is typically the most complex of the automated survey processing system and great care must be taken that its implementation does not get out of control (in terms of time, resources, testing the results, etc.).

It appears to us that automatic editing and imputation must have a dual role in the processing of systems. The first role is the most visible one, namely the identification of inconsistencies in the reported data and their elimination, the identification of non-respondents and the creation of some imputed data for them. The second role is to provide printouts indicating, in summary form, the impact of the changes in the data due to computer processing. The statisticians must be able to assess the impact of the changes in the data arising from such processing and if necessary, intervene to make manual corrections.

The most important intervention probably relates to non-respondents. It is unrealistic to assume 100 per cent response rates even though we aim to approximate it. Computer editing and imputation and the resulting summary measures can focus the follow-up effort in the areas where it can have the most important impact.

In this connection, it is important to emphasize that the storage of microdata and the availability of flexible retrieval systems should have an impact on what are considered to be important or unimportant cases of non-response. Traditionally when we were aiming to produce only a few major aggregates from a survey, we identified as the most important non-respondents the large units; or, in the case of repetitive surveys, units which had a volatile pattern of reporting from survey to survey thus making imputation on the basis of historical data difficult. This strategy needs to be reassessed in the era of microdata set storage. Some of the unanticipated retrieval requirements may well relate to small survey units for which we traditionally tended to allow a higher non-response rate. At the very least, in addition to following up the "important" non-respondents, we should also follow up a sample of the remainder in order to evaluate the impact of imputations on all types of non-respondents.

Increased flexibility of retrieval may expose data weaknesses not only within individual surveys, but also between surveys. One of the objectives of automation of individual surveys is the creation of a data base permitting easy retrieval of information from the files resulting from the particular survey. In a sense, therefore we are in the process of developing a multitude of small data banks whose subject matter scopes overlap. As more such data banks are developed, they can create incompatibility problems of immense complexity. Integration tools are urgently needed to overcome these problems. One important integration tool is a central register including the universe of units included in individual surveys. Such a register can facilitate an unambiguous definition of the scope of different surveys, it can provide a high quality frame for the selection of samples, it can provide a tool for the consistent classification of identical units in different surveys, and it can facilitate the comparison of microdata collected in different surveys. Statistics Canada is in the process of establishing a central register covering all business (and other, for example, institutional) reporting units, taking into account the many complexities in the identification of respondents in different business surveys.

At least as important as a uniform frame for related surveys is the problem of uniform concepts. What is needed with increasing urgency is a data element dictionary identifying the statistical concepts underlying each data element (for example, "hours worked", "total retail sales", etc.) which can serve as a standard convention enabling the unique referencing of identical data elements with identical terms and different data with different terms. Such a data element dictionary would also serve as the foundation for an overall system of file descriptions of all machine-readable files. Clearly, such description system is a necessary part of the strategy of flexible retrieval and other statistical manipulations for we must be able to reference identical data by the same terms for the convenience of users.

One of the most important data problems facing the statistical office is to draw users' attention to the degree of reliability of the statistics released. We must develop general models incorporating the contribution to the total mean squared error of sampling error, reporting errors, as well as conceptual, classification and processing errors. Although it might not be possible to estimate the mean squared error of each individual retrieved aggregate, it should be estimated for a sufficient

variety of such aggregates to enable the development of general models of the mean squared error which could provide guidance to users of the order of magnitude of the errors associated with the data.

Statistics Canada has developed a very flexible retrieval system which is being implemented in connection with the 1971 Population Census. We are in the process of developing generalized tables which will be provided to any user who obtains census data and which will show for each of several broad classes of estimates the size of the mean squared error as a function of the size of the estimate. Similarly, we have developed general tables for the sampling error of Labour Force Survey data. These efforts must be considered, however, only as the very beginning of a program to develop tools to enable users to identify and appraise errors.

An important part of controlling data problems and of developing the necessary error models is the conduct of a rigorous program of *evaluation* of surveys. We are used to computing sampling errors and, at Statistics Canada, the formulae used traditionally for the computation of sampling errors incorporate the impact of the random reporting and processing errors. Such formulae, however, do not measure the bias which may be due to any of a number of possible sources. Starting with the 1961 Census, we began to conduct, as part of our quinquennial population censuses, extensive evaluation programs aimed at measuring the different components of the mean square error. These evaluation studies had far-reaching impacts on the methodology employed in the 1971 Census. Several of our other surveys incorporate control features which provide as a by-product some evaluation type information. However, we have a very long distance to travel before we can claim to understand clearly the sources of errors in surveys and the complex forces which generate them.

Project Implementation Problems

Although data problems are probably the most fundamental problems underlying the automation of statistical processes, the most immediate and frustrating problems relate to project implementation.

Several of our surveys now use machine-readable files for mailing out questionnaires, checking-in respondents, the identification of non-respondents and the corresponding follow-up actions, the editing and correction of the returns and imputations for non-respondents, tabulations and variance tabulations. We are in the process of automating a comprehensive central register of business units. We have automated the data processing of the 1971 Census, including the editing, correction, sample weighting, the production of predetermined tabulations, as well as the creation of a general retrieval system to permit the retrieval of any cross-tabulation for any area based on the census data. We also have established a general time series data bank capable of storing tens of thousands of time series and retrieving any number of them for printout or subsequent manipulation. However, with a few notable exceptions, our accomplishments to date have been accompanied by considerable frustration and delay. We have made a conscious effort to learn from our own experience but there are still many lessons ahead of us.

In a paper *(2)* presented in London in 1969, we articulated five important lessons we learned from our previous automation experience. Although these lessons need to be supplemented, in the light of our subsequent experience, as far as they go they are as valid today as they were two years ago. These five points, in summary form, follow.

1) We have emphasized the importance of developing an overall design for the automation projects identifying its individual components and specifying in detail at least some of them before programming begins.
2) The ultimate system implied by the overall design should be split into fairly self-contained modules. The modules should be small enough for the implementation to be carried out in a reasonably short time by *average* programmers.
3) Specifications for the corresponding computer systems have to be developed in collaboration with experts in survey methodology, computer systems, and subject matter.
4) It was stressed that individual responsibilities must be assigned within a working team and that a project manager be designated.
5) Finally, the vital importance of effective communication between members of a project team was emphasized.

During the last two years, although we were trying to live by the prescriptions outlined above, we nevertheless encountered some difficult problems of implementation.

One of these is that the stress on the necessity for an overall design and for complete and unambiguous specifications resulted in some unduly long gestation periods. Having emphasized that computer systems, once implemented, are difficult to change, having emphasized the need for complete and unambiguous specifications, we tended to inculcate a sense of finality in those who have the task of writing such specifications. Yet, in spite of this, we did not succeed in eliminating the need for changes to specifications after programming began or even after some of the subsystems were developed and tested. This was due to the fact that the ultimate systems we were aiming at could not be thought through in complete detail in advance of their implementation.

Although modular programming helps when changes to programs have to be made, it appears that we have to extend the concept of modularity from programming to implementation. In fact, what we may need is a phasing of implementation. By phased implementation, we mean one of two possible things: either the implementation of a subset only of the overall system, with additional subsystems added to it gradually as required; or the initial implementation of a skeletal version of the whole system, with provisions for its subsequent expansion and refine-

ment. The latter is the one we now favor. We want to emphasize that we are not advocating compromising the ultimate objectives. Rather, we advocate, where feasible, their attainment through several generations of gradually more complex systems.

The process of phased (or gradual) implementation just outlined has several advantages. First of all, it reduces the complexity of design testing and implementation since, *at any point in time*, one would be aiming at a more modest incremental goal. The achievement of the more modest goals provides a convenient check point for all concerned. The particular features of the new systems can be tested thoroughly in a real application (rather than using just test data). Shorter implementation periods also give us a better sense of achievement.

This point is very important. Personnel who are responsible for the operation of the survey, are faced at the time of automation with the task of learning all the complexities a major new system. In addition, they are required to monitor and test the data produced by the new system and compare them with the results of the old system. (This is necessary both as a system test and as part of the effort to monitor and control historical continuity of series.) Since this kind of testing of a new system cannot be accomplished using test data alone, these personnel are often faced with the parallel running of the old system and the new. There are seldom sufficient skilled resources to do so. The consequences of this, in terms of a long period of double work load, inadequate testing, acceptance on the basis of insufficient evidence, etc. are obvious enough. By contrast, in a phased implementation of a mail survey, for example, the mail-out and check-in can be automated and implemented after a relatively short period of testing. The implementation of automatic mail-out might immediately save some resources which can be available for the testing of subsequent subsystems. The next module to be implemented might, for example, be the tabulation module (leaving, for the time being, editing and data collection a manual operation). Finally a simple version of editing and imputation may be implemented which can be refined gradually to more sophisticated versions.

Thus, the first major advantage of phased implementation is that it reduces the impact of automation on the operating personnel (or, rather, it phases this impact over time in a more realistic fashion). A second advantage of phased implementation is psychological. The successful implementation of each new generation of the automated system and its acceptance for operational use provides a psychological boost to everyone concerned with the development.

The third advantage of phased implementation is that the implementation of each phase provides management with a check point at which a decision can be made whether additional features of the intended overall system should be proceeded with eventually, proceeded with immediately, or abandoned altogether.

There may seem to be an inconsistency between the concept of phased implementation presented here and our earlier views *(2)* that "the computer is more than hardware equivalent of a host of clerks. The application of computer processing is a fundamental parameter which must be taken into account in the design of surveys with the aim of rendering efficient the survey as a whole, given its objectives. In addition, it is our view that in order to derive the full benefits of computer processing, one should in general plan to go all the way: to comprehensive automation of all phases of the survey".

We must emphasize that modular implementation is no substitute for an overall system: it is a way of accomplishing it with as little pain as possible. The *outlines* of the overall system embodying the final automated survey must not be shortchanged. The modules that are selected for implementation must be consistent with the overall design. *Moreover, they have to be conceived in a general enough fashion to be capable of expansion and changes.* To the extent, however, that these modules would also be required to be compatible with the existing survey (or with some relatively small modifications of it) this may undoubtedly be the source of some conflicts. As additional modules are implemented, previous modules may have to be changed somewhat. We believe that so long as these changes are anticipated, their impact can be minimized. Even so, it is probable that if one were to compare the cost of implementing the ultimate system at once with the cost of implementing it in a gradual fashion, phased implementation might well be the more expensive of the alternatives. However, such a simplistic cost calculation would be based on the assumption that the systems are successfully implemented on schedule. This may not be the case. Thus, one should look at the incremental cost of phased implementation as insurance money. It may well be worth *planning* to spend, say 50 per cent more on the implementation of the ultimate system to ensure that we do not have to pay an *unplanned* 300 per cent more.

Fortunately, important tools are being developed to assist us with the problem of modular implementation. A series of generalized programs have been developed in Statistics Canada (and elsewhere) capable of coping with a particular phase of processing of a variety of surveys. For example, we have a generalized program to produce address labels for mail-out purposes; another generalized program for the comparison of two files, for example in preparation for historical editing; another generalized program for editing and data correction; and retrieval programs capable of producing tabulations (including weighted tabulations) from a number of files.

We believe that these generalized programs and their extensions will play an increasing role in the automation of our surveys. They have several major advantages over special custom-made systems. First, because they are generalized and widely used, they soon become reasonably well debugged. Second, because they are widely used, they must be well documented. Third, their application reduces the implementation

time in that it avoids the time-consuming process of program design, coding, testing and debugging. Fourth, and most important of all, they facilitate experimentation and make subsequent changes relatively easy.

This last point needs to be elaborated. When specifications are prepared for a complex custom-made program, the consideration of alternatives is by necessity a theoretical exercise. Because of the complexity of what is to be implemented, to assess and test its impact would require very large volumes of test data and almost impossible amounts of manual calculation. Thus, very often one finds out the full impact of such programs on the data only after they are implemented at a considerable cost and effort. The most fundamental advantage of generalized programs is that, because of their ease of implementation, they facilitate the testing of alternatives at a reasonable cost.

While generalized programs may not have precisely all the features that would be required for the implementation of the ultimate system, they may have an exceedingly important role to play in the scheme of modular implementation: they provide an easy means of implementing skeletal versions of the ultimate system which may subsequently be replaced, if necessary, with custom-made programs at a later date. In fact, as successive versions of generalized programs are developed, they may be capable of coping with very complex and sophisticated processing requirements as well.

It is essential that the anticipated benefits of automated surveys, as well as their cost and time of implementation, be estimated in advance and that these estimates be checked out after implementation in the form of post-implementation audits. This is an important feedback of the automation process enabling all concerned to gradually improve their ability to estimate both costs and benefits, as well as enabling the management of the statistical office to derive general policy lessons that can be applied to future projects.

Confidentiality Problems

It is a salient feature of statistical information that it always relates to a well-defined population rather than to a particular individual respondent. However, if a population of interest is sufficiently narrowly defined it may contain only one respondent. If this respondent can be identified on the basis of the statistics, their release would violate statistical confidentiality. Much more difficult is the problem of so-called residual disclosure. Residual disclosure occurs when a number of tabulations are released, none of which violates confidentiality in itself, but which together would enable a user to deduce information about a single identifiable respondent. Unlike direct disclosure, residual disclosure is notoriously difficult to detect even in the case of preconceived tabulations. Obviously, a policy of flexible retrievals exponentially increases the problems of checking for residual disclosure, since each new retrieval must be checked against all the previous retrievals.

One of the authors in a recent article *(4)* has developed a precise mathematical theory dealing with tests of residual disclosure. In all but the simplest situations, the practical implementation of this theory would involve prohibitive amounts of calculations. How can the overriding objective of protecting the confidentiality of statistical returns be reconciled with the need to use as extensively as possible the data that has been collected?

In connection with the general retrieval system which is being implemented on the 1971 Census data base, we have developed a general approach to the solution of the confidentiality problem. As far as direct disclosure is concerned, the retrieval system automatically checks each tabulation cell to ensure that it satisfies the predetermined requirements of statistical confidentiality. (This test is generally based on the requirement that each aggregate must relate to more than a predetermined minimum number of respondents.) To avoid the more complex problem of residual disclosure each *ad hoc* tabulation will be subjected to a small amount of random disturbance. This will involve a random reallocation of a small proportion of selected respondents within the table. The particular strategy of reallocation is so designed as to minimize the impact of this random disturbance on the accuracy of the data. This random disturbance will prevent users from manipulating the retrieved statistics in order to derive other statistics which were not tabulated.

Although, the strategy of random disturbances will increase somewhat the mean square error of the statistics, this may well be a necessary price for making the data available in the detail requested. The procedure can be automated and thus it can be fast and inexpensive. Even apart from this consideration, however, the strategy of random disturbances appears to be a "necessary evil" since a rigorous checking for residual disclosure is impossibly complex even with our modern computers. Statisticians are well used to making compromises between the often conflicting requirements of cost, reliability and timeliness. It now appears that a new dimension of the compromise must involve confidentiality and reliability.

Some Issues Confronting Management

In spite of what has been a somewhat cautious tone throughout this paper, a logical analysis of what has been said leads to the conclusion that the process of automation is, frustrations involved notwithstanding, desirable and essential. This reasoning starts with the fact that the extensive use of data *already collected* is the only conceivable way of satisfying the variety of information requirements of society. Thus, there is a compelling need for storing microdata and creating automated, flexible retrieval systems. Starting from this premise, and considering the strain that such extensive use puts on data reliability, the cleanliness of the stored microdata becomes an essential consideration. Thus we are inexorably led to the necessity of automated editing and correction at the microdata

level. We are also led to other considerations of statistical standards, such as the necessity for complete and up-to-date frames for surveys and censuses which, in the case of economic surveys, renders a central register of business units essential. An important source of updating such a register is from the surveys which are using it currently. Thus, we are led to the desirability and necessity for using the central register of business units either in the form of a central mailing list or in the form of a co-ordinating device. This, in turn, leads to the need for creating a machine-readable central register and machine-readable mailing lists for individual surveys, which would be connected by an automatic process of information flows. Thus it seems that, starting from the nature of information use, we are led to the full process of automating individual surveys and creating co-ordinating devices. One of the challenges of the management of statistical offices is to recognize this fundamental unavoidability of automation and take every necessary step to smooth and facilitate its broad implementation.

Another challenge is how far and how fast to go. We have no magic solutions to offer. Individual decisions will have to be made according to individual circumstances. However, a few important considerations, basically related to costs and benefits are sufficiently general to be applicable to almost any situation.

Short-term costs are very real and highly visible, although not necessarily accurately predicted at the beginning of development. However, once developed, the cost of effective data dissemination is relatively small in comparison with the costs involved in the collection of statistics. We are firmly convinced that the benefits of the two systems mentioned earlier in the paper (the general data retrieval system for the 1971 Census and the general time series data bank) will be far in excess of the costs. However, the precise estimation of these benefits in advance is exceedingly difficult. Given the long developmental time required for such systems, any advance estimation of their benefits would necessarily involve forecasting the information requirements of users some years in advance – a very difficult task. In the case of the 1971 Census information system, one can speculate that relatively few significant uses of the system would repay for its entire development cost. A single bridge that will not be built at the wrong place, the more precise delineation of one or two urban renewal areas, a single instance of a more precise identification of poverty areas which might receive economic aid from the government, a few household surveys that need not be taken because the data will be available from the Census through the system – any one of these applications could repay the development cost of the system.

The estimation of benefits to users is particularly difficult because users are a heterogeneous group both with respect to their requirements and their capability of using large amounts of information. It is relatively safe to forecast that user requirements will increase with respect to the amount of data required, the type of disaggregations, the kinds of manipulations, the format and medium of the retrieved data, and the desired retrieval response time. However, users have a wide variety of requirements and varying levels of computer sophistication. If the statistical office wants to keep in step with the users having the most advanced requirements, then it must be prepared to take greater risks in terms of development costs. Given the long development time required by automation, we believe that only a general policy commitment to attempt to *keep ahead* of the information requirements of users will succeed in ensuring that the statistical information service does not *fall seriously behind* the demands put on it.

Thus cost-benefit considerations of automation, while they might reaffirm the ultimate need for automation, do not necessarily provide generally applicable guidelines for determining how fast we should proceed with automation in comparison with, for example, the alternative of undertaking several new surveys. Here again, we believe that the development and utilization of generalized programs should have a high priority because of the broad facilitating nature of such programs. The automation in a one-by-one fashion of individual surveys in a large statistical office like Statistics Canada is a gigantic task. Custom-made programs which are parts of complex systems are difficult to change, and, with the need for change imposed by changes in technology, methodology, and user requirements, just updating earlier automated systems can keep occupied half to two-thirds of a large programming staff. Modular programming can diminish this ratio. However, we believe that only through extensive development and utilization of generalized programs will this ratio be significantly improved in favor of new developments, rather than changes to existing systems.

Footnotes

(1) This article is a summary of a paper by I.P. Fellegi, Director General, Methodology and Systems Branch, Statistics Canada and S.A. Goldberg, Assistant Chief Statistician of Canada, presented at the Conference on the Role of the Computer in Economic and Social Research in Latin America, at Cuernavaca, Mexico, October 25 - 29, 1971. The views expressed in the paper are the personal views of the authors and may not be shared by other officers of Statistics Canada.

(2) This paper draws upon and updates an earlier one presented at the London meeting of the International Statistical Institute (I.P. Fellegi and S.A. Goldberg, Some Aspects of the Impact of Computer on Official Statistics, Bulletin, ISI, Volume 43, 1969).

(3) As used in this paper, the word automation consists of more than mere conversion of existing operations to the computer. In this sense, automation of surveys means their complete redesign taking into account the full impact of the possibilities opened up by computer processing with the aim of rendering efficient the survey as a whole, given its objectives, not just its parts.

(4) I.P. Fellegi: On the Question of Statistical Confidentiality. To be published in the March, 1972 issue of the Journal of the American Statistical Association. Copies are available from the author on request.

Escalation of Industrial Contracts

The following paper, prepared by Mrs. C.M. Jones, Head of Capital Expenditures, Prices Division, contains suggestions on the use of price statistics in the escalation of industrial contracts.

One of the major uses of price index numbers is in the escalation or updating of agreements which have a life of many months or years. The practice arose because it was often found easier to achieve long-term agreements if both parties to the agreement were protected against changes in price levels during the life of the agreement. Participants in contract escalation have come to believe that some of the element of risk is removed if one can avoid having to predict price behaviour over long periods of time. Traditionally, parties to such contracts look to sources of published or official statistics to use in contract escalation.

Possibly the most famous example of escalation is the periodic updating of benefits under the Canada Pension Plan through a complex formula based on the Consumer Price Index. Some wage agreements are also adjusted on the basis of changes in the same index.

The Prices Division's role in contract escalation is one of obtaining a fairly complete statement of the purpose of the contract escalation from one or both participants and advising on the availability of price indexes in which the concepts and content appear relevant to the type of contract under consideration. Selection of the specific indexes to be used is the responsibility of the parties to the contract. When a selection has been made, the Division provides the indexes for the duration of the contract *(1)*. Many users obtain their indexes from the Division's major publication, *Prices and Price Indexes,* catalogue number 62-002, monthly. In other instances, the participants agree to use data produced by the bureau but not published in *Prices and Price Indexes.* In such cases, indexes are forwarded to one of the parties on a Statistics Canada letterhead and are thereby classed as official statistics. If the number of indexes to be provided is large or if an unusual amount of clerical resources is required to prepare the data, a charge may be made for this service.

Because indexes must be rebased or otherwise reorganized from time to time, parties to long-term escalation contracts are urged to inform the Prices Division of their index selections to ensure that it is possible to maintain comparable indexes for the life of the contract. This suggestion is of particular concern for parties to contracts who are using or considering the use of the General Wholesale Index for contract escalation. Users are also urged to write contracts which are not upset by index revisions.

Although responsibility for index selection and method of escalation rests with users, the Division is able to provide the following brief outline of the factors most users seem to keep in mind when selecting indexes for the escalation of industrial contracts.

1) The purpose of the escalation – For complex industrial goods such as pumps, turbo-generators and the like, a common purpose of contract escalation is to protect the manufacturer from changes in the prices of his material and labour inputs over which he usually has little control. The purchasers who are parties to such contracts tell us they can then better evaluate competing bids where the differing forecasts of future price change are omitted from the contracts bid.

2) The components in the contract to be subject to escalation – Most parties select important material inputs and direct shop labour. Production equipment used, overheads and profits seem to be escalated rarely.

3) The weighting of components – The method of deriving the weights, and ultimately, the weights to be assigned to the components to be escalated must be established. Weights give the proportional representation of the items to be escalated.

4) Index selection – Select the appropriate indexes to use in the escalation on the basis of:

(a) the contracting parties' history of price changes for the materials under consideration.

(b) an examination of a variety of the indexes most logically related to the commodities under consideration.

In practice, this means that the most closely related indexes are sought but, in most instances, users also examine more general indexes to which the commodity under question belongs. Thus, someone requiring an index for carbon steel castings would also look at price movement of other types of castings and the indexes for the castings industry and the gross-weighted iron and steel products industries.

The commodity content, the terms of sale and the internal weightings of all the indexes under consideration should be examined. For example, an index can be for the appropriate commodity but for an inappropriate market with the result that the commodity index shows different price behavior from that experienced by the manufacturer choosing escalators. Also, as most industrial price indexes are selected to measure average Canada price movement for sales by domestic manufacturers of a given commodity to a given class of customer, large and small volume purchasers or purchasers in small segments of the market may experience quite different purchase price experience.

For these reasons, most users not finding a specifically appropriate material index find it more reliable to use a related but more aggregative index to serve their purpose. The main reason is that more aggregative numbers usually move more smoothly than less aggregative indexes, and are usually less subject to sharp unexpected changes in movement. However, such price indexes reflect the average movement of many prices and may not be precisely representative of the prices experienced by an individual company. Nonetheless, many users of this type of index are content with an aggregative number which expresses

price changes for a generally related group of commodities, industry or group of industries. Such users intend to incorporate in their contract bid the forecasted impact of more specialized price changes which may not be suitably reflected in the movement of the selected price escalators.

In addition, users are urged to keep in mind one of the main characteristics of a price index. A price index is designed to reflect how much more or less it would cost in successive time periods to purchase an identical basket of goods and services. Changes in *costs* associated with changes in non-price elements of costs such as quantities and qualities purchased, will not be reflected in the movement of the price index. Indeed considerable efforts are expended to ensure that such effects are excluded from index movement. Non-price factors which relate to such events as change in models, changes of customers' terms of sale or quantity discounts, are excluded deliberately from price movement. For example, during a period when prices were unchanged, a particular purchaser may lose his quantity discount because he buys in smaller quantities. In this instance, the purchaser's costs have risen although a price index would show no change in level. Users of price indexes in contract escalation need to consider the implications of these conventions when designing the particular format of their contract escalation.

(c) Charting the indexes selected for a period of at least 30 months and considering the implications of historical price movement on the contract escalation, in relation to the producer's price experience.

For example, most manufacturers desire escalation because they have experienced rising input prices in the past. If the most appropriate index selected has a suitable trend but displays sharp variations about the trend, the parties to the contract might consider the most appropriate method of smoothing out the sharp short-term changes in price behavior.

(d) If none of the usually used indexes seems to move in an appropriate fashion, consider less traditional sources.

For example, average hourly earnings which are often used in escalation clauses are sometimes not appropriate for the price movement of a specific trade important to the contract escalation. In this instance, basic wage rates in union wage agreements are a possible data source. Union wage agreements are filed with a number of government agencies and, in our experience, the unions themselves have been most helpful in providing information about wage rate levels or changes in rates.

Users requiring escalation for imported commodities might consider the employment of statistics published by foreign statistical agencies, such as the United States Bureau of Labour Statistics, and the Department of Industry and Trade, the Department of Employment and the Central Statistical Office of the United Kingdom. Statistics Canada has on hand many of the publications of these agencies and they are accessible to users.

5) Design of escalation clauses – Once the index selection has been agreed to, the contracting parties should ensure that the contract is written in such a way that time base, title and other revisions to the indexes can be accommodated without invalidating the escalation portion of the contract.

Footnote

(1) This responsibility is subject to pre-contract discussion with the Prices Division.

STATISTICS CANADA TOWER – Construction is underway on a new office building for Statistics Canada. The new tower, which will provide 25 floors of office space above a mezzanine, ground floor and a basement, is expected to be completed in the spring of 1973.

The existing Statistics Canada building will be renovated and used to accomodate the administrative staff.

NEW PROJECTS

A New Look in International Travel Statistics

Statistics Canada, in co-operation with the Departments of National Revenue, and Manpower and Immigration, has launched a review of statistics on international travel. There are three phases of this program:

1) the implementation of an interim system of collecting numerical counts, by category of travellers, at entry points to Canada; and

2) The analysis of user requirements for international travel statistics, and the recommendation of systems of improved sample surveys to collect data on expenditures and other characteristics of international travellers.

The first phase has been completed and, on the basis of this analysis, an interim system (phase two) was introduced in January 1972. Because of the rapid growth in the numbers of international travellers and the need to facilitate the smooth flow of travellers at entry points without loss of important statistical data, the interim system is designed to improve reporting methods by reducing and standardizing forms, by implementing sampling techniques at some of the major entry points, and by centralizing the processing of the data at Statistics Canada headquarters.

The phase two system should make available more accurate and timely monthly data on the number of travellers by country of residence, by province and by port of entry. The information published, although similar to previous years, will be expanded to include the following data previously only available annually:

a) overseas residents categorized by entry direct to Canada and entry via the United States;

b) returning Canadian residents from overseas via the United States;

c) returning Canadian residents from the United States by private plane and boat; and

d) greater detail by port of entry.

A description of survey methods and definitions of terms used will be presented with the above data on traffic movements in the monthly publication *Travel Between Canada and Other Countries,* catalogue number 66-001. The first report will be available, in a bilingual form, early in 1972.

The third phase of the review began in the fall of 1971 with the listing and examination of user requirements. The results of this analysis should lead to possible alternative systems, the designing and planning of tests, the examination of trials and final recommendations. These steps will be carried out during 1972 with a more definite outlook expected for early 1973.

More information may be obtained from M. Valiquette, Chief, International Travel Section, Balance of Payments and Financial Flows Division, Economic Accounts Branch, Statistics Canada, Ottawa, K1A 0Z8.

Road Transport Review

A major review of road transport statistics has been undertaken by the Transportation and Public Utilities Division of Statistics Canada. Assessment teams have been established within the Division to critically examine each of the following surveys:

– roads and streets mileage and expenditure; international toll bridges, tunnels and ferries

– motor carriers, freight; moving and storage, household goods; warehousing

– trucking – origin and destination;

– motor vehicle traffic accidents; the motor vehicle, parts I to IV;

– passenger bus statistics; urban transit.

The assessment teams work under the general direction of an overall Project Management Committee. Each team is headed by a Project Manager, assisted by professional and other support staff who provide guidance and consultation in the course of the review of each survey. Each team is charged with the responsibility of assessing all aspects of each survey under review with a view to revamping the whole series of road transport statistics to more adequately reflect current conditions in the industry.

To date, the major emphasis of this review has been directed toward assessing each survey in terms of its usefulness to major users. All industry-oriented associations have been contacted and advised of the review and their co-operation solicited to assist in its conduct. The Ministry of Transport and the Canadian Transport Commission have been similarly advised, and representatives from both industry and government are actually working with the teams in each of the areas involved. This is considered a unique and highly effective method of ensuring their full co-operation and support.

Major respondents are also being contacted to ascertain changes in their record-keeping systems and practices, and to discuss reporting problems and collection procedures.

Although the review has been going on for only the past couple of months, already a number of changes and improvements have been recommended, such as publishing information in service bulletins to improve timeliness, revisions and additions to various series to improve their usefulness as well as a number of innovations and techniques designed to improve collection, processing and compilation procedures. The broad nature of the investigation is expected to result in additional recommendations of this kind as the review progresses.

Additional details concerning this review may be obtained from the Transportation and Public Utilities Division, Economic Statistics Branch, Statistics Canada, Ottawa, K1A 0T6.

Revision of Standard Commodity Classification

Canada's Standard Commodity Classification (S.C.C.) is undergoing its first major revision since 1959. The revision (more an updating than a change in basic concepts) provides new commodity classes and variations in old ones to reflect advances in technological developments and changes in the kinds of analytical data needed.

Publication of the first volume of the S.C.C. manual, entitled *Standard Commodity Classification Manual, Volume I – The Classification,* is expected in February 1972. It contains a coded list of some 5,900 commodity class descriptions, combined into sections, divisions and groups and it describes the structure and underlying principles of the classification system.

Standard classification systems form the framework for integrating statistical series derived from different sources. Statistics Canada developed a Standard Commodity Classification during the 1950's with a view to providing comparable commodity statistics from all sources in Canada, but notably for imports, exports, production, shipments and materials used by manufacturers, and transportation (freight). Although the original intent was to use the S.C.C. itself for all commodity surveys, this turned out to be impractical. Instead, working classifications based on the Standard were developed to suit the commodity patterns and collection arrangements found in the different commodity fields. After more than a decade of use, an updated version of the S.C.C. was needed to guide and extend data comparability programs which would be reflected in all commodity statistics for the 1970's.

The revised version is the result of an intensive co-ordinated study, extending over four years, by collectors and users of commodity data within Statistics Canada, supported by frequent consultation with other government departments and the private sector. Apart from the many individual suggestions, the bulk of the recommendations considered in the revision were developed by Statistics Canada research teams composed of subject matter officers, chiefly from the Manufacturing and Primary Industries Division, the External Trade Division and the Input-Output Research Division, under the guidance and direction of Central Classification Staff. Useful comments were also received from other federal government departments, the provinces, trade associations and from representatives of individual companies engaged in manufacturing or trading in commodities.

Volume I – The Classification will be issued first in English. The French version is expected to be available before the end of 1972. *Volume I* is the forerunner to the more detailed companion volumes, *Volume II, Numerical Index,* and *Volume III, Alphabetical Index.* Publication of these latter two volumes, which differ from one another principally in the arrangement of items and which are intended to serve as references, is expected toward the end of 1972. Each manual will contain about 60,000 commodity terms.

Readers interested in more information about the Standard Commodity Classification are invited to contact W. Bokovoy, Central Classification and Company-Establishment Integration, Integration and Development Staffs, Statistics Canada, Ottawa K1A 0V7. Copies of the Revised 1971 Standard Commodity Classification, Volume I – The Classification, catalogue number 12-502, will be available from Publications Distribution, Statistics Canada, Ottawa, K1A 0T6.

Survey of Expenditure at Isolated Posts in Canada

The Prices Division of Statistics Canada has responsibilities for measuring certain limited elements of the living cost differentials encountered by federal government staffs serving at various locations in the more remote parts of Canada, to assist in the establishment and revision of appropriate allowances for such personnel. These isolated posts are situated not only in the Yukon and the Northwest Territories but also in most of the ten provinces.

Early in 1972, in connection with this program, the Comparative Living Cost Section is planning for the first time to conduct an Expenditure Survey by mail to obtain information on spending patterns of federal government employees who served at isolated posts during 1971. This survey is intended to provide a better understanding of conditions at these remote locations, and to enable comparisons to be drawn between spending patterns there and those in other parts of Canada. It parallels a somewhat similar survey undertaken successfully by the International Prices Section two years ago among government employees stationed abroad.

The present project consists of three parts:

(1) Expenditure Survey – A recall survey of expenditures over the entire budget during 1971, broken down under approximately 50 spending categories.

(2) Diaries of Food and Other Household Purchases – Two diaries for completion in two successive 7-day periods early in 1972, to provide details of purchases of food for home consumption as well as a range of household supply items.

(3) A Survey of Supply Sources and Shipping Methods – A questionnaire to yield information about where purchases are made and to indicate how any goods which are not bought from local suppliers are shipped to the isolated post.

The results of this survey, which will provide the first comprehensive information on the spending habits of a sizeable segment of the population in geographically remote communities, are expected to be useful for the improvement of measurements of living cost differentials being encountered by government staffs serving at such locations throughout Canada.

For more information on this survey, contact H. Segal, Assistant Director, Retail Prices and Living Costs, Prices Division, Economic Statistics Branch, Statistics Canada, Ottawa, K1A 0T6.

Canadian International Trade Classification Commodity Index

The Statistics Canada External Trade Division is now in the final stages of producing a new working document for importers and their agents, entitled the *Canadian International Trade Classification Commodity Index.* The need for this index grows out of the decision of the Department of National Revenue, Customs and Excise to apply electronic data processing to the clearance of imported goods. This automation program is being developed in many of its aspects in co-operation with Statistics Canada.

In order to explain the new Commodity Index and its application, it is necessary first to describe the present system of compiling import statistics. External Trade now receives Customs entries and invoices from Customs ports across Canada. These documents, comprising some 10 million a year, are scrutinized, classified and processed by the staff of the Division. The information extracted is assembled to produce import statistics in terms of country of origin, port of clearance, quantity, value, and commodity. The present Import Commodity Classification, made up of some 2,700 individual commodity classes, is used in the monthly report *Imports by Commodities,* catalogue number 65-007, and in other quarterly and annual publications of the External Trade Division.

The users of the present five-digit Import Commodity Classification will find that the new Canadian International Trade Classification Commodity Index is an expansion, containing some 14,000 seven-digit commodity codes for use by importers in completing the redesigned Canada Customs Import Entry form, B-3, as of April 1, 1972. The extension by two additional digits will not only provide greater detail but also facilitate the administrative procedures connected with the clearance of goods through Customs ports across Canada.

The sources of this greater detail were many. Some of the 2,700 classes were sub-divided following conversations with industry, trade associations and government departments in the product areas concerned. External Trade Division also drew on the observations of the divisional commodity specialists of the patterns of trade and kinds of goods traded. For example in some areas, such as chemicals, a large number of trade names and proprietary descriptions were included since the goods are documented in trade according to these rather than by some generic chemical description.

As an example of this exercise in commodity code refinement, class 703-25 "Thermometers", representing about $2 million in imports in 1970, was expanded to give five new seven-digit classifications, involving eleven product descriptions as follows:

703-25 THERMOMETERS	
THERMOMETERS, CLINICAL	703-25-11
THERMOMETERS, CALORIMETRY	703-25-21
THERMOMETERS, LABORATORY	703-25-21
THERMOMETERS, HOUSEHOLD	703-25-31
THERMOMETERS, WINDOW	703-25-31
METERS, TEMPERATURE, ELECTRIC	703-25-41
THERMOMETERS, INFRA-RED RADIATION	703-25-89
THERMOMETERS, RESISTANCE	703-25-89
THERMOMETERS, THERMOGRAPH	703-25-89
OVEN TESTERS, TEMPERATURE	703-25-89
TESTERS, OVEN/TEMPERATURE	703-25-89

Every other commodity class has been expanded in a similar fashion, resulting in some 14,000 new seven-digit commodity classifications applicable to about 45,000 separate commodity descriptions. In the spring of 1972, this detailed commodity classification will be published, in both official languages, as a commodity code index arranged alphabetically to facilitate the preparing and processing of the new Customs entry forms. The present plans call for the revision of the work on an annual basis, making any necessary improvements and including new products coming into Canadian external trade.

Considerable benefits are expected from the new system. Statistics Canada will be able to collect import commodity data in much finer detail, with the resultant improvement in the quality of the commodity data produced. For Customs, the benefits lie principally in savings of administrative costs in the collection of the appropriate duties and taxes. The importers will find that in 1974, once the system is operating nation-wide, they will be able to obtain release of their goods more quickly. As users of Statistics Canada statistics, they will also benefit from expanded and more timely data on the products in which they are interested.

For further information, please contact A.J. Wibe, Chief, Commodity Intelligence Section, External Trade Division, Economic Statistics Branch, Statistics Canada, Ottawa, K1A 0V5.

Work Continuing on Machinery and Equipment Price Indexes.

In June 1971, the Prices Division of Statistics Canada first published price indexes of construction machinery and equipment *(Prices and Price Indexes,* catalogue number 62-002). This marks the first of a series of industry-classified price indexes relating to purchases of machinery and equipment. By 1972, it is expected that similar indexes for machinery and equipment will be available for the following industries: forestry, truck transport, sawmills, road maintenance, open pit mining, and storage and warehousing.

These indexes represent an expansion in the availability of detailed commodity indexes for complex goods. Such indexes are of use to a large number of government and private analysts for the price correction of historical value series or for forecasting economic trends. Manufacturers of such machinery and equipment, purchasing agents and market researchers can also make similar use of these indexes.

To increase their usefulness, price indexes for Canadian-made machinery, imported machinery and their composite indexes will be published wherever possible for the commodities in the sample and for the total industry, on a monthly basis in *Prices and Price Indexes.* The manufacturers' selling prices used in these series are be adjusted as necessary for exchange rates, duty rates and federal sales taxes.

For more information on this subject, contact J. Plumpton, Industrial Prices Section, Prices Division, Economic Statistics Branch, Statistics Canada, Ottawa, K1A 0T6.

Family Expenditure Surveys: 1969 Results and 1972 Plans

Results: Survey of Family Expenditures, 1969 – It is expected that first results will soon be available from the large-scale survey of family expenditures carried out early in 1970 by the Family Expenditure Section of the Prices Division, Statistics Canada. In this survey, a sample of 22,000 households was assigned for interview to obtain a complete accounting of family expenditures and income in the 1969 calendar year. The sample was designed to represent families and individuals living in private dwellings, urban, rural non-farm and farm, in the ten provinces. In contrast, previous expenditure surveys carried out during the past two decades have been limited to selected urban centres. The 1948-49 survey, although similar in scope to the 1969 survey, yielded usable results only for the non-farm population. This is the first expenditure survey, therefore, to provide an all Canada composite expenditure pattern.

On the basis of experience in earlier surveys, the sample of 22,000 households was assigned with the expectation that it would net approximately 15,000 usable records. In fact, about 15,500 schedules were considered usable. The response rate of 69 per cent was slightly higher than that obtained in the urban surveys of 1964 and 1967, and appreciably better than the 65 per cent response obtained in the national food diary survey conducted during 1969.

A generalized tabulation system has been developed with potential to extract the maximum amount of information from these records. In addition to the complete detail on expenditure, income and other financial changes entered on the 32-page schedule, each family tape record contains forty codes which classify it according to location, urbanization, income, family size and composition, age of head, etc., and other characteristics developed from the expenditure record. In all, each tape record consists of 1,234 information fields.

It is planned to publish this information in four volumes under the general title, *Family Expenditure in Canada, 1969.* The volumes will be entitled as follows:

Volume 1 – All Canada, Urban and Rural, catalogue number 62-535
Volume 2 – Regions, catalogue number 62-536
Volume 3 – Major Urban Centres, catalogue number 62-537
Volume 4 – The Analysis of Family Expenditure, catalogue number 62-538

Standard tables will be similar in format to those published in recent reports for the 1964 and 1967 surveys *(See Statistical Observer, Volume 4, Number 3, October 1971, p. 12).* Expenditures for a given classification will be presented as a summary table showing family characteristics, main expenditure groups and their distribution in the total, and also as a lengthy, detailed table showing average expenditure per family and percentage reporting for individual items. Volumes 1, 2, and 3 will consist mainly of these two standard types of tables, with introductory text. Volume 4 will contain a variety of analytical material including estimates of variance and the results of multiple regression analyses of expenditure data from the 1969, 1967 and 1964 surveys.

The publications will present a selection from a large body of unpublished material. Because the size of the survey makes possible a greater degree and variety of cross-classification than ever before, many tables will appear in summary form only, with additional detail available upon request. The problems of storage and easy access to unpublished tabulations are being met by transferring the major part of computer output directly from tape to microfilm. A microfilm Reader-Printer will facilitate scanning and retrieval to service specific requests.

Although the expected release date of the information resulting from this major survey represents an improvement in timeliness over earlier ones, potential users may wonder why information collected in the first quarter of 1970 cannot be processed and released before the end of the following year. Family expenditure surveys, especially large-scale ones, are time-consuming ventures at all stages of collection, clerical processing, key-punching, computer editing, programming, and even, in relative terms, in the time required for computer processing. No way has yet been found to by-pass the operations of clerical editing and key-punching which are particularly time-consuming for expenditure surveys.

In processing the 1969 survey, most of the clerical editing was completed by the end of 1970, but the last stages, involving

the acceptance or rejection of problem schedules, continued in 1971, with key-punching finally completed in the middle of that year. After repeated runs of large blocks of data through computer edits, the basic data tape was declared "clean" by early September 1971. This allowed the first stages of production, comprising creation of 25 sort tapes, as a preliminary to running tabulations, to begin. A set of tables was run to test the functioning of the program with the complete data set, and to obtain a realistic estimate of tabulation time and cost.

A "one-shot" survey, even when it builds on past experience, cannot achieve the timeliness of repetitive surveys such as the 1969 food expenditure survey in which editing and other processing were carried out cumulatively as the series of monthly surveys progressed. Results for the food expenditure survey, which also referred to the calendar year 1969, were released by the end of 1970. The first volume of the report, *Family Food Expenditure in Canada, 1969,* Statistics Canada catalogue number 62-531, is already available and will be followed by a second volume, catalogue number 62-532.

Timeliness, although important, is not the only consideration in expenditure survey methodology. Record-keeping or "diary" was chosen as the most appropriate method for collecting detail on frequently purchased items such as food and other household supplies. It has also been used in the United Kingdom and other European countries for the collection of all household expenses, supplemented by recall information for expenses made on an annual basis. The method of recall interview, as used in Canada and in the large decennial surveys conducted in the past by the United States Bureau of Labor Statistics, involves a lengthy, comprehensive interview, with references wherever possible to records, checkbook stubs, etc. It is subject to criticism because of the proven fallibility of human memory. Researchers in survey methods who have undertaken to measure memory loss have shown that it generally increases with the length of the recall period. On the other hand, record-keeping, in which memory loss is minimized, requires continued co-operation and carries the risk of altering or conditioning the behaviour of respondents by the mere fact of survey participation. Higher first-week expenditure is a generally-observed characteristic in record-keeping surveys of two weeks or more. For food and relatively short-term consumption goods, it may be assumed that any unusual spending in the first week is compensated in the second, and that the two weeks together form an acceptable estimate for a two-week period. For other items, this assumption may be less valid.

Plans for Surveys in 1972-73 – The intention of the foregoing remarks is not to deal exhaustively with methodology problems, but to indicate that such problems exist. Because of the urgency of data needs, the systematic exploration of data collection problems frequently receives low priority. However, in 1972, with the extremely large body of 1969 data becoming available, it has been decided to incorporate variations in method into the survey program, in conjunction with an up-dating of certain areas of the budget. Survey activities in 1972 are being concentrated on two partial budget surveys. The first of these surveys, which will be carried out in February and March of 1972, with reference to the year 1971, covers expenditure on shelter, home furnishings and other household durables, including vehicles. Purchase data will be collected in the same manner as in 1969, using an inventory approach to household appliances and vehicles. Apart from the partial coverage of the budget, the experimental feature of the survey consists of detailed questions on credit purchases, designed to elicit more complete information on financing costs and interest charges than has been collected in past surveys. A sample of 4,600 households, expected to yield more than 3,000 records, is being assigned in eight major urban centres.

The second survey will be carried out as a bi-monthly series from March 1972 to January 1973, and will attempt to collect full detail on clothing purchases by recall for the two preceding months. In each bi-monthly survey, a sample of approximately 1,650 households will be interviewed, totaling almost 10,000 households over the six surveys. Both the foregoing surveys will be carried out in the urban centres of St. John's, Halifax, Montreal, Ottawa, Toronto, Winnipeg, Edmonton and Vancouver.

Commencing in 1972, more resources will be committed to research in survey methods. It is hoped also to draw some useful conclusions from a new approach in survey methods being undertaken in the United States by the Bureau of Census, which now has the responsibility of carrying out expenditure surveys for the Bureau of Labor Statistics. This survey, which will replace the traditional decennial survey carried out by the BLS, will be a combination of quarterly recall and a diary survey, each administered to a different sample. For the quarterly survey, a panel of families from an assigned sample of 20,000 to 25,000 households will be interviewed five times, beginning in the first quarter of 1972 and ending the first quarter of 1973. This survey will not cover the total budget, but will be supplemented by the diary survey which will cover all household purchases for a two-week period, with an expected sample of about 17,000. Although there has been some testing of both panel and diary methods, misgivings have been expressed by data users as well as expenditure survey experts concerning the response results in the panel tests, the complete break in continuity with past surveys, and the formidable task of integrating the two sets of data. A session of the American Statistical Association annual meeting in August, 1971 was enlivened by a discussion under the topic *Methodology of Consumer Expenditure Surveys,* which indicated again the problems and challenges of consumer expenditure surveys. *Inquiries about Family Expenditure Surveys may be directed to I. McWhinney, Chief, Family Expenditure Section, Prices Division, Economic Statistics Branch, Statistics Canada, Ottawa, K1A 0T6.*

Export Promotion Seminar

In June 1971, Statistics Canada played host to 24 business and government officials from seventeen emerging nations for a one-day seminar organized by the External Trade Division. This was the second time the bureau has participated in the Export Promotion Program, organized by Waterloo Lutheran University and sponsored by the Canadian International Development Agency. The visitors represented countries in Africa, South East Asia, and the Caribbean.

On hand to welcome the group was V.R. Berlinguette, Director General, Economic Statistics Branch, who also introduced the day's speakers – John Wall, Chief, Trade Information Section, External Trade, Andrew Billingsley, Statistics Use Development Officer, Ottawa Region, and Art Wibe, Chief, Commodity Intelligence Section, External Trade.

Mr. Wall described Canada's trade statistics, and how to use them in assessing market opportunities in this country. The theme of marketing research was continued by Mr. Billingsley who described how other Statistics Canada reports could be used to complete the market assessment. Mr. Wibe completed the formal presentations, outlining the classification system used in the bureau.

The visitors had been divided into four study groups by the University and a marketing study assigned to each. In the time remaining, everyone took advantage of the opportunity of doing some research on these studies. Several commodity officers from the External Trade Division sat in on the discussions, providing assistance where necessary.

The second half of the delegates' Ottawa visit was spent with Department of Industry, Trade and Commerce officials.

Grain Statistics Symposium

The Agriculture Division and the Statistics Use Development staff of Statistics Canada, in co-operation with the Canadian Wheat Board and the Canadian Grain Commission, organized a symposium on grain statistics to increase communication between the various suppliers of grain and crop statistics and between the suppliers and users of these data. The Agriculture Division regarded this symposium as the first phase in developing a co-ordinated approach to the application of newer techniques to better serve the agriculture sector, and the identification of problem areas in grain statistics.

The two-day meeting in Winnipeg was attended by representatives of federal and provincial governments, agri-business and farm organizations. L.E. Rowebottom, Assistant Chief Statistician, Statistics Canada and M.H. Head, General Director, Management Information Services Division, Canadian Wheat Board, opened the conference. At the meeting, papers were presented describing the various roles of the Agriculture Division of Statistics Canada, the provincial agricultural statistical agencies and the Canadian Grain Commission in providing grain statistics. The statistical requirements of the grain trade, of agriculture extension specialists, and of those concerned with policy formulation were also outlined.

During the meeting, there was opportunity for general discussion of the papers. As well, the representatives divided into four discussion groups to deal in more detail with some specific aspects of grain statistics.

A number of topics arising from these discussions were summarized and presented to the delegates at the close of the symposium. The first recommendation was to set up a standing committee on grain statistics which would work toward identifying and solving problems in crop and grain statistics. This committee would be composed of representatives from statistics-producing agencies and user groups.

In addition, the symposium suggested that the various agencies involved in producing grain statistics (Statistics Canada, the Canadian Grain Commission, the private grain trade, etc.) should attempt to improve co-ordination of their activities in order to provide better service to statistics users.

Many specific areas of improvement in grain statistics were suggested by the delegates, such as: more small-area data; more climatological data; information on the movement and pricing of non-quota grain, especially feed grains; the publication of an expanded package of data on farm management practices; information on the supply and pricing of agricultural inputs; more detailed statistics on Durum wheat; clarification of the basis on which dockage is calculated in grain production estimates; a break-out of the category "animal feed, waste and dockage" in supply-disposition tables for grains; and the use of metric units in publishing statistics for grains traded internationally.

The delegates also had a number of suggestions concerning the publication of statistics, especially with regard to improved timeliness. Interest was shown in the use of CANSIM in this area. The need was expressed for a better market intelligence system to regularly provide primary producers with timely, high quality market data. The expanded use of the news media as vehicles for releasing data quickly was also suggested.

The Agriculture Division of Statistics Canada has already acted on some recommendations of the symposium and is considering others. For example, metric units were used in the November 1971 production estimates, in addition to the traditional units of measurement. This practice will be continued in the next release of export data. Also, preparations are underway for setting up a standing committee on grain statistics, and the first meeting is expected to be held in the spring of 1972. *Readers interested in more information on this symposium are invited to contact R. Johnson, Crops Section, Agriculture Division, Socio-Economic Statistics Branch, Statistics Canada, Ottawa, K1A 0L7.*

NEW REPORTS

New Publication from Labour Division

To meet the growing demand for more information in the specialized field of labour statistics, the Labour Division of Statistics Canada's Economic Statistics Branch has produced a new publication, *Notes on Labour Statistics.* This publication is designed to make available the results of analytical and developmental work in labour statistics, especially that information relating to the various labour data series produced in Statistics Canada.

The 50- to 75-page journal will include articles and notes on such topics as the labour force, employment, mobility, earnings, hours of work, job vacancies, pensions, etc. The material will be supplied mainly by the staff of the Labour Division but contributions will also be considered from labour economists in other government departments and agencies (both federal and provincial) and from those in the academic community.

Initially, *Notes on Labour Statistics* will be an annual publication, although it may be issued more frequently in the future. Main users of the information in this journal are expected to be government and university economists and statisticians, as well as executives in business and labour organizations.

The first issue of *Notes on Labour Statistics* is planned for release in February 1972. Along with technical articles, this issue will contain a review of recent developments in labour statistics in the bureau, describing new work in progress in the Labour Force Survey, the Job Vacancy Survey and in other areas such as pensions, labour costs and employment by occupation.

Topics of the technical articles appearing in the first issue are: the relationship of earnings of males and females in the manufacturing sector; national industrial accident statistics; a discussion on the use of Job Vacancy Survey data in labour market analysis; employment and unemployment of youth in summer months; seasonal patterns in part-time work; job search patterns; youth participation in the labour force; and the educational attainment of the Canadian labour force.

Copies of Notes on Labour Statistics, catalogue number 72-207, are available from the Publications Distribution Unit, Statistics Canada, Ottawa, K1A 0T6. Inquiries about material in the publication may be directed to H. Buckley, Co-ordinator, Manpower Research and Development, Labour Division, Economic Statistics Branch, Ottawa, K1A 0V1.

1971 Edition of U.S. Statistical Abstract

The Statistical Abstract of the United States is the standard summary of statistics on the social, political and economic organization of the United States. The 1971 Abstract, the 93rd edition of this valuable reference book, was recently released by the U.S. Bureau of the Census. Special efforts were made to incorporate 1970 Census information into this edition.

The 1971 Abstract includes 1970 Census figures for total population; population density; population by metropolitan, urban and rural residence; and such characteristics as sex, age and race at national and state levels. Basic 1970 population data also are presented for Standard Metropolitan Statistical Areas and for large cities.

Data of current significance are contained in the new tables on minority groups, police officers killed, jails and jail inmates, credit card banking, pesticides, characteristics of college faculty members, waste paper utilization and price indexes for selected countries.

The Statistical Abstract of the United States: 1971 is available from the Superintendent of Documents, United States Government Printing Office, Washington, D.C. 20402, for $5.50.

Nova Scotia Statistical Review

The Voluntary Economic Planning Division of the Nova Scotia Department of Development has released its third annual statistical review. This publication, prepared by the economic analysis section of the division, is designed for use by people in government and industry who require concise and readily available information on the performance of the Nova Scotia economy, and its position compared with the selected provinces and Canada as a whole.

The majority of the statistics have been extracted from various Statistics Canada publications. All sectors of the economy have been covered – primary industries, manufacturing, services, trade, etc. In addition, there are statistical series on population, income, the labour force and capital investment.

Copies of the Nova Scotia Statistical Review are available from the Department of Development, Halifax, Nova Scotia.

Canadian Aviation Handbook

In recent months, the Aviation Statistics Centre of the Transportation and Public Utilities Division has been putting the finishing touches on a new publication, *Aviation in Canada, 1971.* Compiled and written by personnel of the Centre, the publication was designed to provide a broad, interesting view of the growth and development of the air transport industry and some of the problems which have occurred. In addition, it is valuable reference source on all aspects of flying in our country.

For the interested reader, four chapters deal particularly with historical facts, the roles of international organizations and the federal and provincial governments in aviation, and numerous other items of information such as the provincial distribution of flying, gliding, and aircraft safety, since the turn of the century. The Aircraft Technology chapter points out Canadian research, development and manufacturing of aircraft, imports and exports and the operating characteristics of different planes in this country, concluding with a review of STOL technology. Three sections outline specifically the growth of airport traffic, the flow of passengers and cargo on the main routes and the operations of commercial air carriers, emphasizing the activities during the decade of the 1960's.

The handbook shows many statistical tables originally compiled for internal studies which now will be released to the

general public. It contains data on government expenditures for aviation and explains how air traffic control works. Tables and charts illustrate the increase in registered aircraft since World War II and the rise in the number of licensed pilots, numbering 40,000 in 1971. Each chapter is documented with tables and charts, and a glossary of terms is appended to the book for the better understanding of specific aeronautical terms.

The value of *Aviation in Canada, 1971* is that it contains, in one volume, the statistical highlights from the last ten years, drawn from Aviation Statistics Centre publications, as well as providing the general background information required for total view of the air transport industry in Canada.

For additional information, contact Jan Bekooy, the Aviation Statistics Centre, Transportation and Public Utilities Division, Economic Statistics Branch, Statistics Canada, Congill Building, 275 Slater Street, Ottawa, K1A 0N9.

Canada's International Investment Position

This major new report, published in December, brings together available data on Canada's international investment position, extending and revising material published in *Canada's International Investment Position, 1926 to 1954,* catalogue number 67-503, and subsequent releases in Canada's Balance of International Payments reports. The main summary tables contain data from 1926 to 1969, although most of the detail extends only to 1967. In addition to statistics on the year-end levels of Canada's international assets and liabilities, the report contains tables covering investment income flows and broad measures of the extent of foreign ownership and control in the Canadian economy. The principal statistical changes in this latest report are the increased geographic detail of foreign direct investment in Canada and both the geographic and industrial detail of Canadian direct investment abroad. The latter series provide, for the first time, data covering numbers of investors and investments, and size distributions. With a special focus on Canada's direct investment in developing countries, more detailed information than hitherto available is also given for Canadian export credits.

Copies of Canada's International Investment Position, 1926 - 1967, catalogue number 67-202, are available from the Publications Distribution Unit, Statistics Canada, Ottawa, K1A 0T6.

Inquiries about material in the publication should be directed to D.K. McAlister, Chief, Balance of Payments Section, Balance of Payments and Financial Flows Division, Economic Accounts Branch, Statistics Canada, Ottawa, K1A 0Z8.

Director Retires

F.F. Harris, Director of the Health and Welfare Division of Statistics Canada's Socio-Economic Statistics Branch has retired after 22 years with the bureau. In 1949, Mr. Harris came to Statistics Canada from the Newfoundland government service.

As well as developing many new programs in the Health and Welfare Division during his career, Mr. Harris is well known internationally. He was involved in both the seventh and eighth revision of the World Health Organization's international classification of diseases. This classification is used throughout the world as a guide in producing health statistics.

Appointments

Norman F. Beaudoin has been appointed Head of the Aggregate Productivity Measures Unit of the Statistics Canada National Output and Productivity Division.

C.H. Bubeck, formerly Capital Markets Sector Head, Financial Flows Section of the Balance of Payments and Financial Flows Division, was promoted to Chief of the Provincial Government Section, Governments Division, Statistics Canada.

D.W. Hall has been named Director of Personnel Administration for Statistics Canada. Mr. Hall has worked in a wide variety of personnel positions, including the federal departments of Public Works and Agriculture, the Public Service Commission and the Canadian International Development Agency. His last position was with the Personnel Policy Branch of the Treasury Board Secretariat.

G. Phelan has been appointed Head Librarian of the Statistics Canada Library. Miss Phelan's experience in library work includes positions with the Bank of Montreal Library and various posts in the McGill University Libraries system.

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STATISTICAL OBSERVER

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The Statistical Observer is designed to contribute toward informing economists, statisticians and related professionals throughout Canada about selected statistical and research developments undertaken in Statistics Canada, in other federal departments and agencies, in provincial departments, in universities and in business and independent research organizations.
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Census Geostatistical Areas

The traditional function of the Census Division's Geography Section is to delineate the statistical areas for the collection and presentation of census data. The areas created or adopted are used in all publications and computer print-outs produced by the census. The object of the following report(1) is to show how a coherent system of statistical units was established at the national level, at the same time respecting the obligation to provide the provinces with data on as many types of areas as possible which they consider official.

Statistical areas can be classified in two ways: according to their hierarchical rank in the territorial subdivision; or, according to the extent of participation of Statistics Canada in determining their boundaries. In this report, we shall choose the first approach and, as we go along, specify in each case the degree of the bureau's participation.

Provincial Level

The most complicated data and cross-classifications are available at the provincial level. In addition, for certain more complex tables, and also for the breakdown of long tables into bulletins, Canada has been divided into six regions. Three of these regions, Quebec, Ontario and British Columbia, contain one province only. The Maritimes and the Prairies correspond to the traditional concept, and the last region groups the Yukon and Northwest Territories.

Multimunicipal and Intraprovincial Level

For census purposes, there are three main types of areal divisions in the provinces, all comprising individual municipalities. These areas are neither equivalent nor comparable to one another because they were established for different purposes.

(1) Electoral Purposes

Through the Representation Act, the federal government divides the provinces into electoral districts. These electoral districts serve as a base for the creation of enumeration areas which are used for the collection of census data. Thus, although electoral districts are not statistical areas, the census must recognize them and provide data for them. In fact, the "legal reason" for the decennial census is to determine changes in population distribution as a basis for the revision of the federal electoral map. The total count of population, and the population count of the previous census, within each electoral district will be published (catalogue number 92-703) so that an historical comparison can be made. Distributions of the population, on the basis of age, marital status, language etc. for each electoral district will be available at a nominal cost on special data sheets.

(2) Administrative Purposes

The provincial governments of Prince Edward Island, Nova Scotia, New Brunswick and Quebec have divided their territory into units called "counties". In British Columbia, a recent revision of the administrative structure led to the creation of regional districts which are considered, for statistical purposes, as equivalent to counties. In Ontario, in addition to the traditional counties, there are "regional municipalities" and "district municipalities" which are treated as counties in the tables.

In some provinces, there is no administrative level between the province and the municipality. This is why Statistics Canada, in collaboration with the provincial governments, has created census divisions in Alberta, Saskatchewan, Manitoba and Newfoundland for which it provides the same data as for counties.

On the whole, counties and their equivalents are stable units which are very useful for the preparation of historical series. However, it will be impossible to make a comparison between the former divisions and the new regional districts in British Columbia, except for the total population counts.

(3) Statistical Purposes

Statistics Canada determines the boundaries of census *metropolitan areas and census agglomerations.* These are also multimunicipal entities which, unlike the others, exist only in major urban centres and their fringe areas. They are used in presenting data for urban areas where the municipal boundaries are too arbitrary for data by municipality to be meaningful.

Census Metropolitan Areas – A metropolitan area for census purposes is the main labour market for a densely built-up area with a population of 100,000 or more. It corresponds to the commuters' area. Since there was no place-of-work data available when the delineation was done, the following criteria were used as a basis: distance to the built-up area, structure of the labour force and population increase. Only complete municipalities or subdivisions are included in a census metropolitan area.

The systematic application of constant criteria within the country raised two problems: comparability and uniformity. The problem of comparability stems from the difference between 1966 and 1971 boundaries. However, a bulletin will give the population count of the previous census for the 1971 delineation.

The problem of uniformity stems from the reaction of local governments. More and more, large cities or urbanized areas have planning boards, which are large users of statistical data. These agencies would like to see their planning regions or areas recognized. However, the criteria for delineating planning regions differ from one area to the other. To compare data of one urban area with those of another, Statistics Canada had to use constant criteria, sometimes at the prejudice of local interest(2).

Many tables are available for census metropolitan areas. However, several breakdowns of these areas are adopted depending on the amount of detail in a given tabulation.

Often, only totals for the entire metropolitan area are given; sometimes a distinction is made between "urbanized core" and "fringe", that is, the remainder of the metropolitan areas; and, in some cases, statistics are shown for each municipality within the metropolitan areas. The publications provide more details by metropolitan area than by county (or division) but less than by province. There were 22 metropolitan areas for the 1971 Census, compared with 19 in 1966, the new ones being Chicoutimi-Jonquière, St. Catharines-Niagara and Thunder Bay.

Census Agglomerations – The census agglomeration concept closely resembles that of the census metropolitan area because it deals with urbanized areas only. However, the difference lies in size and in some delineation criteria. The population of agglomerations ranges from 2,000 to 100,000 whereas in metropolitan areas, by definition, it is 100,000 or more. For the delineation of census agglomerations, only the first step used for the delineation of census metropolitan areas is applied; that is, inclusion of the municipalities completely or partly located in the continuous built-up area. First, a study is made to determine whether, outside an urban municipality with a population of 1,000 or more and a density of 1,000 or more persons per square mile, there is a densely built-up area with a population of 1,000 or more and a density of 1,000 or more inhabitants per square mile. In such a case, the central urban municipality and the built-up fringe are considered as the urbanized core of a census agglomeration. Complete municipalities and, most of the time, complete subdivisions are included in census agglomerations.

In 1966, the delineation of agglomerations with populations ranging from 2,000 to 100,000 had already started. However, they had different names depending on their size. Agglomerations where the central city had a population of 25,000 or more were called "major urban areas" and their data appeared in the regular publications. Agglomerations with 25,000 or less were called "urban areas" and data were available in special tables, only by request. Furthermore, the 1966 urban areas were only parts of municipalities which made it difficult to make comparisons with data from sources other than the census.

For the 1971 Census, 86 agglomerations were delineated. Availability of data by census agglomeration depends on the size of the agglomeration. Data for agglomerations of 25,000 will appear in the regular publications. Data for agglomerations of 25,000 to 10,000 will be available in special tables in the form of computer print-outs and more restricted variables will be available in this form for agglomerations of fewer than 10,000. However, a special bulletin will give selected variables for all the census agglomerations in Canada.

Municipal Level

The census provides large amounts of data by municipality. However, municipal boundaries often change from one census to another because of amalgamations and annexations. The "Historical" bulletin (catalogue number 92-702) gives the population count of the previous censuses for each municipality. For each census, the boundaries in effect at the date of that census are used for the population count. When boundary changes affect the comparability of data, footnotes give the explanation of the change that has taken place. In addition, the Geography Section publishes an annual report on the changes in municipal boundaries which gives the 1966 population and area of the annexed region. These two procedures tend to reduce the problem of the comparability of historical data by municipality.

(1) Cities, Towns, Villages and Other Municipalities

The criteria determining whether a municipality is a village, town or city vary from one province to another. Nevertheless, the census respects this distinction in its publications, although considering these three types of municipalities as equivalent. The same procedures apply to the five boroughs of metropolitan Toronto.

The municipalities to which departments of municipal affairs have not conferred the status of city, town or village have names which vary from one province to another. The following is a list of a few types of municipalities and the provinces to which they apply.

Parish:	Quebec, New Brunswick
Rural municipality:	Manitoba, Saskatchewan
Township:	Quebec, Ontario, Prince Edward Island
Improvement district:	Alberta, Ontario
Municipal district:	Alberta, Nova Scotia
Local improvement district:	Saskatchewan, Newfoundland Northwest Territories, Yukon
County:	Alberta (not to be confused with the county at the multimunicipal level).

For statistical purposes, all these municipalities are considered equivalent and their names synonymous.

Most of the tables published do not include all the municipalities because there would be too many. Tables are generally prepared for the cities, larger towns and villages, and other municipal subdivisions of similar size. However, in many cases, the data are available on request for the smaller subdivisions.

(2) Other Census Subdivisions

The term "subdivision" may sometimes have a more limited meaning than a municipality and describe a statistical area created by Statistics Canada in co-operation with the provinces. In some provinces or territories such as Newfoundland, the Yukon and Northwest Territories, there are vast areas which have not been organized into municipalities. Since it may not be sufficiently useful to give only a single total for such large areas, the bureau, in co-operation with the provinces, has subdivided these territories in some cases. The resulting subdivisions have neither administrative nor legal status but

serve as equivalents for municipalities for statistical purposes only.

Nova Scotia is a somewhat special case. In this province, each county contains cities, towns or villages but the rest of its territory constitutes a single municipality called a "municipal district". The bureau has also established subdivisions in these municipal districts of Nova Scotia in order to maintain comparability with the provinces which have a large number of rural municipalities or whose unorganized territory has been divided into subdivisions by the bureau.

Municipalities sometimes change boundaries from one census to another. The same phenomenon occurs, although less frequently, in the case of the other census subdivisions established for statistical purposes. Hence, the 1971 Census data will be based on new subdivisions in Newfoundland and British Columbia.

(3) Unorganized Territories and Indian Reserves

Most of the provinces – except New Brunswick, Nova Scotia and Prince Edward Island – have territories which have not been organized into municipalities. When this territory is not divided into other census subdivisions, the data will appear as a total for the "unorganized" portion of each county or its equivalent. To permit a more detailed study of these unorganized territories, the bulletin on unorganized townships gives data for areas which were originally established exclusively for surveying purposes in the Prairies and in northern Ontario and Quebec.

Indian Reserves have a special place in the hierarchy of census statistical areas. Indian Reserves do not have municipal status, but they are counted separately, even if they are located within the geographical limits of a municipality. In the published tables, data for all Indian Reserves in a given county or census division are combined and presented as for a separate "municipality".

Intramunicipal Level

Most of the statistical areas mentioned so far have been delineated by agencies other than Statistics Canada, but the bureau has adopted or recognized such delineations. Up to the 1941 Census, it was felt that the most detailed level for which statistics could be produced was the municipal level. Since then, there has been a trend toward giving increasingly more detailed information on areal units. This stems from the fact that users are conducting more and more detailed studies and wish to get away from the arbitrary framework of municipal boundaries. In considering the intramunicipal units, we shall proceed from the largest to the smallest.

(1) Census Tracts and Area Aggregates

Since 1941, metropolitan areas and other urban centres of 50,000 or more have been subdivided into census tracts – small statistical areas of comparable population, clearly defined physical boundaries, and homogeneous socio-economic characteristics. The boundaries of these tracts have varied from one census to another according to changes in population

The first population counts are made by enumeration area. However, no data are published on this basis: the data will be made available in the form of computer print-outs, special distribution and in highway and railway patterns. However, the 1971 Census saw the establishment of a numbering system which will make it possible, through suffixes, to integrate future changes and also to facilitate the preparation of historical series. Conversion tables have been prepared for previous years, which will make it possible to go as far back as the origin of census tracts. (For details on the definition, the method of delineation, and the role of local committees in the delineation of census tracts, see the *Census Tract Manual,* available from the Geography Section, Census Division.)

Each census tract is identified individually by the geographic code. For each census tract city or metropolitan area, a special bulletin will provide a substantial number of variables by census tract. (See the Census Tract Series in the *1971 Census Catalogue,* number 11-500.) There will also be special computer summary tapes for the census tracts as well as data on computer print-outs, particularly, a series for the new question on place of work.

The census tract is a purely urban statistical area. When summary tapes were prepared for the 1971 Census, it was realized that the enumeration area level would be too small to guard confidentiality in detailed tables. Nor could the problem be resolved by using the municipal level because some municipalities, especially in Quebec, contain only one enumeration area. Hence, there was a need to establish a coherent system of statistical areas at a level comparable to a census tract, but covering the whole country. Each unit, called an "area aggregate", has a population ranging from 4,000 to 6,000 just like a census tract. Its boundaries must respect a number of other statistical units according to lists provided by users, particularly by the provinces. They do not necessarily follow municipal boundaries but, in areas divided into census tracts, they will preferably follow such boundaries. The "area aggregate" may prove very valuable in the preparation of historical series, since the intention is to keep boundaries permanent.

No publication will give data for "area aggregates"; the sole purpose of this statistical area is the summary tape program.

(2) Enumeration Areas

The entire organization of the census is based on the delineation of enumeration areas. These areas usually represent the territory an enumerator can cover in the period assigned to him. Several criteria are considered in the delineation of enumeration areas:

- population: maximum of 200 households or 100 farms;
- boundaries recognizable in the field: waterways, railways, roads;
- homogeneous rural or urban character;
- easy accessibility to every part of the territory;
- respect for the boundaries of other statistical or administrative areas.

tables or microfilm. Another important dissemination medium will be computer summary tapes containing tabulated data by enumeration area, from which the user can build, with the use of a computer, the area required.

Although data are available for these levels, enumeration areas are nevertheless more operational units than statistical units, because they are not stable enough to permit historical comparability. At every census, the boundaries and the numbering of enumeration areas change since the essential factor of delineation is the population size in relation to the enumeration workload. The Geography Section is preparing conversion tables, in order to follow the enumeration areas from one census to another.

The boundaries of enumeration areas sometimes surround, sometimes include, unincorporated places of five or more dwellings within rural municipalities, known locally by a specific name but not officially delineated, or administered by a municipal council other than that of the neighbouring municipality. The data for these localities are not so precise as for the other statistical areas because the enumerators delineate their limits based on locally-recognized boundaries. Population counts will be available for unincorporated places of all sizes. For places with populations of 50 or more, data will be published in a special bulletin (catalogue number 92-771). The population counts of places with less than 50 people will appear only on an unpublished print-out. If an unincorporated place is large enough to comprise one or more enumeration areas, data other than population counts may be available as well.

Conclusion

The present article has tried to present a picture of the geographical and statistical areas used by the census for presenting its data. All the terms mentioned will be defined in the Dictionary of the 1971 Census Terms and will be used for access to information.

(3) Geocoding Units

The smallest statistical unit defined by the Geography Section is the block-face to which is assigned a centroid identified by co-ordinates where the data are stored. After describing the co-ordinates of a given area, all the centroids it contains can be determined and a number of data can be retrieved. However, data are never tabulated for individual block faces, and the centroids are, in reality, "building blocks" to define user-specified areas. This new system of building-blocks applies to only 14 urban centres in the 1971 Census. For the remainder of Canada, the basic geocoding unit is still the enumeration area.

(1) This article is taken from a paper by Dr. F. Ricour-Singh, Geography Section, Census Division, Socio-Economic Statistics Branch, Statistics Canada, Ottawa, K1A 0T7. More information on this topic may be obtained from Chief of the Geography Section and/or the author.

(2) For further details on the criteria and their application in special cases, refer to the document "Census Metropolitan Areas, Revision of the Delineation, Concept and Criteria for the 1971 Census", available from Geography Section, Census Division, Canada, Ottawa, K1A 0T7.

Recent Developments in United States Federal Statistics

This description of United States statistical developments was taken from an article, entitled "Recent Developments in Federal Statistics", by Julius Shiskin of the Office of Management and Budget. The article first appeared in the December 1971 issue of The American Statistician.

There has been growing recognition of the need for better statistical information on which to base decisions required to conduct modern government and business activities. The increasing magnitude and complexity of government and of society clearly require more accurate, more prompt and more relevant data for economic and social policy formulation, for government program guidance and for internal government management.

About two and one-half years ago, a vigorous effort to develop a statistical program suited to the needs of the times was initiated. This article reports on the shape this program has taken and the progress to date. The focus is upon broad directions of the federal statistical program. Activities of the operating statistical agencies, which in many ways parallel and reflect the actions described here, are left for discussion elsewhere.

The broad approach has been to increase the overall budget for statistics and to improve the organization of federal statistical activities. The added funds in combination with an improved organization are intended to facilitate many specific improvements already underway or contemplated.

Program Content

The top priority programs in evaluating specific proposals for the budget are (1) to extend and improve the basic data required for the System of National Accounts (defined broadly to include national income and product, input-output, balance of payments, flow of funds, and national and sector balance sheets); (2) to improve the accuracy and timeliness of current economic indicators; (3) to organize a set of social indicators within a framework for developing a system of social and demographic accounts; and (4) to develop a more systematic and comprehensive program of state and local area data.

In line with the priorities, major improvements being sought in economic statistics include expansions and accelerated reporting of Census Surveys of Monthly Retail Trade and of Manufacturers' Shipments, Inventories and Orders. These will serve mainly to increase accuracy of measurement of consumption and investment, in addition to improving analysis of the current economic outlook. New work by the Office of Business Economics on the impact of federal activity will help improve fiscal policy analysis in the context of national economic accounts; extension of their work on balance of payments accounts will permit more detailed analysis of country-by-country trade and financial flows to and from the United States; and new studies will strengthen their capability to analyze current economic fluctuations.

Expansions and improvements in BLS (Bureau of Labour Statistics) statistics on prices and wages will provide the basis for improved analysis of inflationary pressures stemming from imbalances in prices, unit labor costs and productivity changes. Other improvements in labour statistics include a series on job vacancies, the first across-the-board collection of statistics on occupational employment in manufacturing industries, and more detailed wage, work injury and industrial relations information on the construction industry.

Major recent budget increases in the area of demographic and social statistics include a greatly augmented criminal justice statistics program in the Department of Justice, the initiation of a long-proposed annual housing survey sponsored by Housing and Urban Development, substantial expansions in educational statistics including development of longitudinal studies, and various innovations in the fields of income maintenance, disability, and population planning. Also provided have been funds for speeding up the compilation of vital statistics and other health data and for preliminary work in connection with the development of a co-operative federal-state health statistics system.

In mid-1969, the Statistical Policy Division of the Office of Management and Budget was assigned the task of putting together a compendium of strategic social indicators. It was intended that this publication would identify national social indicators and provide a focal point for the entire social statistics program. Criteria for the selection of social indicators were established and a large number of statistical series and special studies have been examined in the light of these criteria. Our goal is the publication of a statistical compendium of charts and tables, with detailed explanations of the data, but no policy-oriented interpretation, early in 1973.

Tools for Program Implementation

Co-ordinated Statistical Budget — A co-ordinated statistical program and budget reflect changing needs of policy and analysis was established in June 1969. This led to a comprehensive presentation in the annual budget of financial requirements for federal statistical programs. The co-ordinated statistical budget explicitly recognizes the fact that general purpose statistics are more importantly related to programs of broad national scope than programs specifically assigned to the particular departments collecting the data. Examples of such general purpose statistics are the national economic accounts, price, unemployment and other economic indicators and social indicators, such as size distributions of income, participation in higher education, life expectancy, and incidence of violent crime. This budget thus provides an effective focal point for considering the overall needs for statistics in the light of the multiple uses to which they are put and for balancing the merits of various statistical programs against one another in allocating funds. As a result, the trade-offs for budget for

statistical programs of the various departments are no longer made primarily in relation to their contributions to decisions required for national economic and social policy. The statistics required to guide decision-making in government action programs, such as manpower training, are also taken into account in preparing the co-ordinated budget.

Although there is no neat way of assigning appropriate weights to the general purpose and special program uses of statistics, nor of the various components of each of these categories, judgments of their relative importance must nevertheless be made. For all these reasons, simultaneous consideration of all federal statistical programs in a co-ordinated budget is advantageous.

Forms Clearance – A major opportunity for implementing the co-ordinated statistical program arises from the responsibility given to the Office of Management and Budget under the Federal Reports Act of 1942, requiring approval by OMB of collection of data from 10 or more members of the public. This Act requires the Director of OMB to co-ordinate federal reporting services, to eliminate duplication and reduce costs, and to minimize the burdens upon respondents of furnishing information to federal agencies.

New procedures for reviewing requests for clearance of documents requiring OMB approval were recently initiated. Previously, the review and clearance responsibility was exercised by the Statistical Policy Division, with consultation from other divisions in OMB. Agency proposals intended primarily to collect information for compilation and dissemination of statistics will continue to be reviewed by the Statistical Policy Division. Under the new procedures, however, other agency proposals justified primarily on grounds that the information to be collected would be required for regulation or for program administration are being reviewed by the program division having cognizance over the budget of the submitting agency, with technical assistance as required by Statistical Policy or other OMB staff. This will enable OMB program officers to have early impact on information to be collected for later use in program decisions.

Another development of major assistance in expediting the clearance function is the completion of a Clearance Office Manual. The form used by the agencies to support their request for approval of data collection has been revised to require more detailed explanations of individual report forms and the overall statistical programs.

Reorganization of Federal Statistical Activities

A major step which promises to improve the organization of federal statistical activities has recently been taken.

The need to improve the organization of federal statistical activities arises from the proliferation of statistical collection activities among some 40 different federal agencies, the wide disparities in the quality of data and the standards used by the various agencies, noncomparability in the data from different sources, inflexibility of the present structure in meeting emerging data needs, operational inefficiences and overlapping analytical activities and similar problems.

Under the present organizational arrangement for federal statistical programs, it is very difficult to correct these problems. This was recognized by the recent Ash Council, the President's Advisory Committee on Government Organization. For example, the report of that Council recommends that under the President's Departmental Reorganization Program, a number of major statistical programs be together under common direction in the proposed Department of Economic Affairs. Subsequent to their co-location, it is anticipated that realignments would occur which would help correct the deficiencies cited above.

The four departments (Agriculture, Commerce, Health, Education and Welfare, and Labor) with major statistical components have been requested by OMB Director Shultz to review immediately statistical activities as they are now performed in their agencies in order to identify and effect any changes of organization which would facilitate their transition into a more unified departmental system. The principles serving as guidelines for the review of statistical activities and as a model for proposed changes are, in brief:

a. Determination of need and broad, general specifications for statistical and informational programs would remain decentralized, as at present, within the policy-making and program offices of the various departments and agencies.
b. In each department, planning and analytical functions for general purpose statistics (population and economic censuses, unemployment, prices, wages, and other current economic indicators, and social indicators in the fields of health, education, environment, etc.) are to be centralized in an Office of Data Analysis.
c. In each department, collection and processing of statistical data are to be centralized in a service-oriented data collection and processing center. (For this purpose, as well as for the data analysis office cited above, certain major subdivisions of HEW will be treated as separate entities.)
d. OMB will continue its role of program co-ordination monitoring statistical activities.

Statistical Standards

Another major line of development toward improving the quality of the statistical product of the federal statistical system has been continued attention to standards. Among the important measures recently taken in this direction has been the issuance of guidelines for striking a balance between the accuracy and timeliness of the principal economic indicators. The first objective of these guidelines is to indicate a standard of acceptability of final figures for principal monthly and quarterly economic indicators. The second objective is to set a standard for the accuracy of preliminary estimates. The third objective is to limit the number

of preliminary estimates of final figures. The final objective is to consolidate revisions occurring for various reasons, such as benchmark and seasonal revisions, and replacement of "preliminary" by revised figures. These guidelines are expected to reduce the total number of figures released on a current basis for principal current economic indicators, as well as raise standards of accuracy for both preliminary and final figures.

Another important step in improving statistical standards is the forthcoming revision of the standard Industrial Classification (SIC) now undergoing the most comprehensive review and revision since the 1957 edition of the Manual. All proposed amendments by government agencies and non-government interest groups have been evaluated by a Technical Committee under the Chairmanship of the Statistical Policy Division of OMB, and a revised edition of the SIC Manual, to become effective on January 1, 1972, will be published. Also, the first report on a standard Occupational Classification has been completed under the direction of an interagency committee. Classifications for professional and technical occupations were incorporated in the 1970 Census classifications, and later work included classifications for clerical workers as well as indexes for both groups. Classifications for managers, service workers and operatives are being worked on currently.

Criteria used to designate and define Standard Metropolitan Statistical Areas have been reexamined in detail during the past five years by a federal committee. There has been widespread participation of private organizations and individuals in this review. As a result, a number of changes in the criteria have been adopted, and, accordingly 20 new SMSA's have been created. Revisions in the definition of some SMSA's is also likely to come about as a result of a review of all SMSA's in the light of 1970 Census data. This review is now in process and is expected to be completed by July 1972.

Credibility of Federal Statistics

Recent developments also include steps to safeguard the credibility of government statistics. It is essential to constructive discussions of economic policy that all participants use and trust the same basic statistics. For this reason, government statistical agencies must continually strive to maintain neutrality and objectivity in the presentation of statistics. In order to achieve this objective, the statistics must be released promptly, on schedule, and in a highly professional manner.

Efforts to improve the timeliness of economic indicators received a major impetus from President Nixon's directive, issued only three weeks after his taking office, requiring the issuance of monthly and quarterly statistics "without unnecessary delay." The Director of OMB, who has responsibility for carrying out the President's directive, issued guidelines to attain this objective and, through the staff of the Statistical Policy Division, has monitored this program. Consequently, one third of the releases of the principal economic indicators are issued by the major statistical agencies more promptly than before the President's directive. In the case of other federal statistical reports, the proportion is even larger – 70 per cent. The seemingly more modest speedup for the principal economic indicators is partly accounted for by the fact that over the years a greater effort has been made to release the principal economic indicators promptly, and therefore in recent years it has been more difficult to reduce the release time.

Advance target dates for the release of about 120 principal indicators have now been published for almost two years. During 1971, the target dates have been met in about 75 per cent of the cases, 12 per cent of the series were released before the target date, and 13 per cent were late. Steps recently taken are expected to increase further the percentage meeting the target dates.

Another major principle observed in order to maintain a high credibility level is that the statistics releases be prepared separately and issued at a different time from policy oriented commentary. All government departments now follow this pattern, with the statistics issued by the principal statistical officer in charge, in a written press release, and without a press conference.

President's Commission on Federal Statistics

A commission of distinguished American citizens was appointed by the President a year ago to recommend further improvements in federal statistics. We expect their findings and recommendations to provide a further impetus toward statistical improvements.

Concluding Remarks

This summary indicates the several directions of recent efforts to improve federal statistical activities. These pave the way for, but by no means guarantee, a better statistical program. The success of these first steps depends upon how well they are built upon in the future and supplemented by other measures, including some to extend the activities of the Statistical Policy Division beyond economic and social statistics.

With steadily increasing reliance on statistical information for decision-making and policy formulation, we face a greater challange than ever before to take measures necessary to meet the needs of government and the private sector for accurate, timely, and relevant statistics.

NEW PROJECTS

Revision of Central List

Statistics Canada Central List of Companies and Establishments comprised all those businesses that reported data to statistical surveys conducted by the bureau on a continuing basis, at least once each year. Coverage was dependent on the requirements of the various statistical series: in some industrial sectors, the bureau tried to attain full coverage, and in others, data were collected only from firms of a certain size. The end result was a list of approximately 200,000 records, about one third of the total number of businesses operating in Canada, accounting for more than 70 per cent of the total economy. At the end of 1971, a project was started to extend coverage to some 450,000 entities, consisting of incorporated and unincorporated businesses with one or more employees.

Over the past years, surveys conducted by Statistics Canada and in particular surveys connected with employment and unemployment have had as their base a universe of employers who registered with the Unemployment Insurance Commission and who made contributions to the Unemployment Insurance Fund in respect of any employees eligible for Unemployment Insurance Benefits.

This collection function was transferred from the Unemployment Insurance Commission to the Department of National Revenue on January 1, 1972. This latter department now affects collections to the Unemployment Insurance Fund under the same procedures as contributions to the Canada Pension Plan or tax deductions at source. In addition, arrangements have been made to provide to Statistics Canada the name and address of any employer who opens up a tax deduction account with that department. Therefore, this tax deduction file will represent not only an employer universe as previously defined by the Unemployment Insurance Commission but a larger universe of additional employers who may make collections in respect of the Canada Pension Plan or tax deductions at source, and who were previously exempt from unemployment insurance contributions.

Through joint efforts of the Department of National Revenue-Taxation and Statistics Canada, an intensive effort has been put forth to relate the UIC contribution accounts with the tax deduction accounts and so far we have been able to detect about 300,000 of such relationships. In each of these cases, we have been able to assign an industrial code and a geographical code to the tax deduction account. However, there remained 240,000 tax deduction accounts which could not be identified with or related to the UIC contribution points. Since both an industrial code and a geographical code must be assigned to these remaining tax deduction accounts, it was necessary to mail out the form entitled "Employer's Nature of Business Report".

The results of this survey and the completion of the identification of tax deduction accounts will give a complete list of companies in Canada. This new central list is expected to be ready for use by mid-1972.

Additional information on the central list revision may be obtained from F.H. Smith, and G.W. Swartzen of Central Registers Section, Central Classification and Company-Establishment Integration, Integration and Development Staffs, Statistics Canada, Ottawa K1A 0V7.

Manitoba Bureau of Statistics

On March 1, 1972, the Manitoba Government established the Manitoba Bureau of Statistics. The enabling legislation is modelled after, and is compatible with, the federal Statistics Act. Although the Manitoba bureau is empowered to conduct its own statistical surveys, it is anticipated that activities initially will be centered on the use of data collected by Statistics Canada and other provincial agencies in Manitoba.

Cansim to be Available to Federal Departments

Effective May 1, 1972, the time series data bank and system programs of CANSIM (Canadian Socio-Economic Information Management System) will be on-line at the Computer Services Bureau (CSB). Initially, only federal government departments and agencies will have terminal access to CANSIM; however, in the future, this service may be extended to include other users.

As of March 1, 1972, the data bank contained 26,000 economic time series, including all series published in the *Canadian Statistical Review.* Major blocks of series now in the data bank are as follows:

National Accounts (Income and Expenditure Accounts, Balance of Payments, Index of Real Domestic Product)	4000 series
Labour	5000 series
Prices	3500 series
Agriculture	6000 series
Industrial Corporations	3500 series

All series are updated regularly when current or revised information is released. Most series are updated nightly; however, a core of most used series will be updated via terminal in prime time. Customers will be able to call upon the system daily to identify series which have been updated or revised.

The CANSIM data entry program is available to federal government agencies which may wish to store and maintain series of private interest. The retrieval program will retrieve data for manipulation on a random access device or on magnetic tape. Manipulative programs initially available with CANSIM at CSB will be the MASSAGER, FANTOM, MATOP and the X-11 seasonal adjustment. Outputs are also available on printouts or cards.

Access to CANSIM is arranged by the General Time Series Staff of Statistics Canada. *For more information on this project or on CANSIM, contact M. Lennox, Chief, General Time Series Staff, Economic Accounts Branch, Statistics Canada, Ottawa K1A 0Z8.*

Methodology and Systems Branch Projects

Survey of Community Health in Ottawa – The Department of

Epidemiology and Community Medicine, University of Ottawa will conduct a household survey in the metropolitan area of Ottawa during 1972, among married and single persons between the ages of 15 and 45, to study attitudes and characteristics related to family planning. A questionnaire, containing more than 100 questions, is provided for each female and male household member in the age range.

The Methodology and Systems Branch of Statistics Canada is giving professional advice in selection, estimation and variance estimation and directly supervising sample selection.

Two frames were employed for the sample, (a) the 1970 Might's Ottawa City Directory for the selection of addresses and (b) a list of apartment buildings with more than six units. About 3,000 addresses and apartment suites were selected with the sampling rate in buildings of six floors or more at twice the rate for addresses other than apartments and the rate for units in smaller apartments.

The sample having been selected, it remains to clear up estimation problems where non-response must be compensated for and to derive approximate variance estimation formulas. Apart from this, the role of Statistics Canada in the survey is almost complete.

For more information on the above, please contact G.B. Gray, Senior Mathematical Advisor, Methodology and Systems Branch, or V. Tremblay of the same staff, Statistics Canada, Ottawa K1A 0T6. For subject matter problems, please contact J.M. Last, M.D., or W. Litven, Research Director, Department of Epidemiology and Community Medicine, Royal Ottawa Hospital, Ottawa.

Cost and Variance Studies in Labour Force Survey – For purposes of studying the efficiency of the allocation of the sample in various stages of sampling in the Labour Force Survey, a complex cost and variance study program has been set up. The overall objectives of the sample allocation studies are two-fold: i) to assess the present sample allocation, and any slight modifications, by stages before and after redesign based on the 1971 Census results; and, ii) to set standards for cost of enumeration (considering time spent in enumeration and travel) and for contributions to the variance by stages after redesign to maintain full control of the sample on a continuing basis.

The Labour Force Survey is carried out by enumeration of households every month selected in a multi-stage sample of two to four stages, the number depending upon type of area. Each stage contributes sampling variance to the total variance as a component of variance for which both a theoretical formula and an estimation formula have been derived. The estimates of the components are to be obtained in several runs during 1972 by means of a components of variance system of computer programs for major characteristics. The data will then be analyzed and transformed into variance functions in terms of the sampling ratios and sizes of the units at various stages. Provision is also made to adjust parameters in the various terms of the function as updated measures of size are employed. This is to be accomplished by adjusting population variances in the variance function which have taken into account the varying size measures.

Each stage of sampling also contributes to the cost of the field operation of enumerating, travelling, or listing, although the components are not necessary additive by stages of sampling. For a given allocation, the cost can be easily split up by stages of sampling and this has been accomplished with a detail layout of each interviewer's operations during enumeration week. Each of about 800 interviewers across Canada recorded in detail the times and miles taken for each operation during the interview week of one month selected in the interval July to November, 1971. Special time and mileage forms were drawn up and distributed to the interviewers for this study. The time and mileage data for the various operations (enumeration, contacting households, travelling between segments or clusters, etc.) are being coded and tabulated for various levels (individual interviewer, type of areas, regional office, province, national levels) and the operation should be completed in the spring of 1972. Upon imputation for unreasonable or incomplete data, the staff will derive a cost function in terms of similar variables, as the variance function and the analysis to be carried out will be largely similar to that for the variance function insofar as the two broad overall objectives are concerned.

No attempt will be made to derive an optimum allocation by sampling ratios and sizes of sampling units as it will vary from characteristic to characteristic. Practical considerations limit the possibilities to only about a dozen or so alternatives for sampling ratios and to only small variations in the sizes of delineated units with some interaction between size and sampling ratios so that the number of possibilities is not multiplicative. As a result, the study will be confined to only these possibilities for the cost function and for the variance function, considering a few major characteristics.

For further details and the mathematical developments, readers may contact G.B. Gray, Senior Mathematical Advisor, Methodology and Systems Branch, Statistics Canada, Ottawa K1A 0T6.

1971 Census of Merchandising and Services Now Underway

In March 1972, the Merchandising and Services Division of Statistics Canada mailed out the questionnaires for its part of the 1971 Census. Unlike the population, housing and agriculture phases of the 1971 Census, the merchandising and service businesses census cannot be conducted until 1972 since it attempts to measure actual business activities for a complete financial year.

This business census has two main purposes: to provide a wide range of users with a detailed picture of distributive and service trades; and to serve as a benchmark for a broad program of intercensal surveys covering the same areas.

Because of the significant institutional changes in the merchandising and services areas during the past few years and

also because of the increased extent and complexity of user requirements, it was decided to change the basic reporting unit for data collection from an "establishment" to a "merchandising reporting unit" (MRU). An MRU is defined as "the smallest unit that is a separate operating entity capable of reporting all elements of basic industrial statistics necessary to the calculation of net operating profit."

The MRU recognizes the realities of modern corporate accounting practices and therefore enables the respondent to complete the census form more easily and more accurately, *as well as enabling the Merchandising and Services Division to collect data at a more detailed level then ever before.*

Examples of the information to be sought in the 1971 Census include: form of organization; business personnel; net sales and receipts; opening and closing inventory; purchases; cost of goods sold; gross margin; operating expenses; non-trading income; and accounts receivable. In addition, respondents have been asked to supply detailed information on sales (or receipts) by class of customer and by class of commodity or service.

In addition to MRU statistics, the census will also collect and publish a limited range of data on business locations necessary to the calculation of consumer expenditure statistics for small geographical areas and widely used by market analysts. The "location" defined in general terms as "the place in which the business activity is conducted" does not necessarily coincide with the MRU nor is there any hierarchical relationship between MRU's and locations. However, location data are not intended to be additive with other Statistics Canada series but primarily serve outside users whose interests are focussed on small geographical areas below provincial level.

Two features of the 1971 Census deserve special mention. First, this is the most highly automated survey ever to be undertaken by the Merchandising and Services Division. In order to satisfy the primary objectives of a higher and consistent level of quality and increased timeliness, an integrated automation package has been developed within which the computer system plays a major role – by influencing the contribution of the supporting sub-systems and by providing many of the controls necessary to the census operation.

The 1971 effort is also noteworthy in the sense that considerably greater attention has been paid, in the planning function, to the visual impact of the questionnaire on respondents and to the use of colour as an editing tool of some importance. The census questionnaires are all colour-coded and the printing used is large and easy to read. In addition, great pains have been taken to ensure that respondents clearly understand the meaning and importance of the various questions through the use of "instruction booklets" which are also colour-coded.

Three years of planning and consultation for the 1971 Census are now completed, and the collection of data is now underway. The editing and processing procedures to produce usable information from the collected data are just beginning. The first publications of results of the 1971 Census of Merchandising and Service Businesses are expected in the third quarter of 1972.

Readers interested in more information are invited to contact G. Snyder, Director, Merchandising and Services Division, Economic Statistics Branch, Statistics Canada, Ottawa K1A 0V8. A detailed paper on this topic appeared in the February 1972 issue of the Canadian Statistical Review, Statistics Canada catalogue number 11-003.

CONFERENCES

Annual Meeting of Social Scientists

The Allied Social Sciences Association, a federation of the major social science groups, such as the American Finance Association, the Econometrics Society, the Association for Social Economics and many others, meets each year to discuss research developments in the social sciences. The 1971 meeting was held December 27-30 in New Orleans. Among the Statistics Canada participants was S.D. Khosla of the Econometric Research Division, Integration and Development Staffs. Mr. Khosla and Mr. R. Agarwala, formerly of the Economic Council of Canada, presented a paper entitled "A Neoclassical Analysis of Post-War Inflation in Canada". The paper outlined is based on the results of research carried out for a medium-term macroeconomic model, done in conjunction with the Economic Council of Canada. The ideas presented in the paper are the views of the authors and do not necessarily represent the official positions of the institutions with which the authors are associated. The following is an abstract of the paper.

In the early post-war period, the discussion of inflation was dominated by ideas of inflationary gap which, as an *ex ante* concept, was not perhaps suitable for statistical testing from *ex post* data, and it did not survive long in econometric models. Most of the subsequent discussion was in terms of Phillips curve approach. In recent years, however, doubts have been accumulating about the validity of this approach, except for a very short-run analysis. Arguments from *a priori* point of view, advanced by M. Friedman and E. Phelps, suggest that the trade-off between inflation and unemployment may be only a temporary one. We advance statistical evidence in support of the above argument. More specifically, we argue that statistically fitted Phillips curves usually contain a serious defect and they do not provide an explanation of trend rates of growth in wages or prices. Secondly, we demonstrate that the post-war movements in wages in Canada can be explained reasonably well by a productivity theory of wages. However, since our wage equation assumes an absence of "money illusion" in the labour market, it determines only the ratio of money wages to prices and not their absolute levels. For analysis of absolute price levels, we utilize a monetary approach. We allow for the openness of the Canadian economy by considering the direct impact of U.S. money supply on Canadian money income by constructing a "composite" money supply variable. We argue that this approach is consistent with Keynes' view on inflation in high employment situation, and that a combination of stable monetary policy and active fiscal policy may be the way to achieve stable growth with price stability.

Readers interested in more detail on this paper are invited to contact S.D. Khosla, Econometric Research, Integration and Development Staffs, Statistics Canada, Ottawa, K1A 0V7.

Seminar on Social Indicators

The Canadian Council on Social Development recently sponsored a two-day meeting to discuss the need for, and development of, social indicators. Participants in the seminar, held in Ottawa, January 13 and 14, 1972, included economists, statisticians, social welfare specialists, sociologists, lawyers, urban planners and demographers, from the academic, government and private sectors.

The aims of the seminar were to modify the general climate of secrecy surrounding work on social indicators by allowing for open discussion, particularly of methodological and conceptual problems, and to encourage responsible bodies to develop their verbal commitments into practical work, in line with the basic aims and resources of their organizations.

The seminar heard and discussed six main papers: Social Intelligence and Social Policy, by Dorothy Walters, with the response Let's Look Before We Leap by Gail Stewart; Problems in Developing Indices for Well-Being in the Northern Territories, by Scott Wood; Habitability and Livability – Urban Indicators, by John Page and Norman Pearson; The Need for Social Indicators – the Alberta Case by Earle Snider; and Statistical Development of Social Indicators by Hans Adler, Jenny Podoluk and Leroy Stone.

The seminar divided into four work groups for discussion of the four broad areas of urban indicators, welfare indicators, technical problems and philosophical issues.

Proceedings of the seminar will be published by the Canadian Council on Social Development. *Inquiries may be directed to Ms. Novia Carter, Program Director, Social Policy Unit, Canadian Council on Social Development, 55 Parkdale Ave., Ottawa K1Y 1E5.*

NEW REPORTS

New Retail Prices and Living Costs Service Bulletin

The Prices Division of Statistics Canada has released the first issue of the *Retail Prices and Living Costs Services Bulletin.* This bulletin is designed for the timely release of information about family expenditures, consumer prices and national and international living cost comparisons, for users in various levels of government, in business and industry, in labour and consumer groups and the general public. It will be published at intervals determined by the availability of useful information, anticipated to be at least ten times a year.

Contents of the bulletin will be special articles and tabulations which might not otherwise become generally available, or extracts or abbreviations of information released in advance of regular publications; for example, the first issue will contain information from the large-scale national family expenditure survey. It is planned to include in future issues articles on the impact of changes in indirect taxes on the movement of the Consumer Price Index, comparisons of domestic fuel and utilities costs among major Canadian cities, international comparisons of retail price conditions, and periodic reviews of medium- or long-term price movements in consumer goods and services.

The first issue of the *Retail Prices and Living Costs Service Bulletin,* catalogue number 62-005, was released in February 1972. *Copies are available from Publications Distribution, Statistics Canada, Ottawa K1A 0T6. Inquiries about the bulletin may be directed to H. Segal, Assistant Director, Prices Division, Economic Statistics Branch, Statistics Canada, Ottawa K1A 0T6.*

Education in Canada's Northland

Issues concerning the education of children are vital in any community. The geographic, demographic and cultural dimensions of Canada's northern territories accentuate these concerns. Consider, for example, questions of school location and transportation in land of 1.5 million square miles, with a scattered population of 52,000 people. What about language of instruction where the majority group of 13,000 Eskimos speak 20 different dialects?

A recent publication of the Statistics Canada Education Division, *Education in Canada's Northland,* presents statistics showing how some of these questions have been answered, and documents some of the changes during the decade from 1960-61 to 1969-70.

Contained in the publication are statistics on enrolment in public elementary and secondary schools, public trade schools and federal schools; teachers' salaries, experience, province of origin of certificate and educational level; and sources and allocation of funds.

Copies of Education in Canada's Northland, 1960-1970, are available for $1.00 from Publications Distribution, Statistics Canada, Ottawa K1A 0T6. Questions concerning the contents of the publication should be directed to Dr. Miles Wisenthal, Director, Education Division, Socio-Economic Statistics Branch, Statistics Canada, No. 5 Temporary Bldg., Ottawa K1A 0Z5.

Three OECD Studies

In 1968, the Organisation for Economic Co-operation and Development set up an Expert Group on Computer Utilization. The following reports are two of the studies prepared for this group.

Computerized Data Banks in Public Administration – This publication, prepared by A. Thomas, draws attention to a number of policy issues facing OECD member governments as a result of the increasing demands made on their administration and the potential of modern computer technology for solving some of their data management problems.

The study describes some of the technical characteristics of automated data management and gives indications of the kind of policy problems which have arisen with respect to the use of these techniques in public administration. It also reports on some of the recent developments in member countries.

Although the report is aimed more at describing the problems of computerized data banks than at giving solutions to such problems, some items to be considered in the development and use of automation in data management are presented. For example, the report suggests that the development of automation should be sufficiently open and available for both decision makers and the public to ensure adequate control. And that changes in public administration are needed to meet new conditions in order to make full use of the potentialities of modern data management techniques.

Digital Information and the Privacy Problem – In all countries, the government demand for information is increasing. This demand is enhanced by the ability with the use of computers, to process such information. In this study, G. Niblett, focuses on the danger to privacy arising from these information demands. His remedies are divided into four groups – professional standards of people handling the data, technological safeguards, administrative practices and legal sanctions.

Another OECD study on the general topic of information examines the needs for scientific and technological information and how these needs can be met through changes in structures, technologies and policies. The report, entitled *Information for a Changing Society – Some Policy Considerations* examines current information policies and practices in national and international organizations and outlines a set of goals to be used in formulating national policies on scientific and technical information. In addition, the implications for public policy of information policies are discussed.

These three publications are available for $2.25, $2.00 and $1.75 respectively from Information Canada, Ottawa and Information Canada bookstores across the country.

New Report on Social Sciences

In mid-April, 1972, the Education Division of Statistics Canada released the publication *Federal Government Expenditures on the Human Sciences.* This report is the first step by statistics

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Canada toward the development of a comprehensive statistical series on the state of scientific activities in the field of social sciences and the humanities. A clear and accurate account of the resources devoted to these disciplines has become necessary not only because of their rapid development and growing importance but also because of the variety and complexity of problems faced by social scientists.
(Corresponding information for the physical sciences appears in the Education Division publication *Federal Government Expenditures on Science,* catalogue number 13-202.)

Material in this report was gathered in a survey of federal government departments and agencies which devote resources for the support of activities in the social sciences. Data were collected for the following activities: research and development, general data collection, scientific information, education support, and operations studies. The report contains information on manpower and expenditures allocated to internal activities as well as financial assistance for activities carried out in other sectors – such as provincial and municipal governments, educational institutions, non-profit organizations, business enterprises, etc. A discussion of concepts and methodology used is also included.
Copies of this report, catalogue number 13-545, are available for $0.75 from Publications Distribution, Statistics Canada, Ottawa K1A 0T6. Inquiries about material in the publication may be directed to F. Gagné, Science Statistics Section, Education Division, Socio-Economic Statistics Branch, Statistics Canada, No. 5 Temporary Bldg., Ottawa K1A 0Z5.

1971 Census Catalogue

Enormous volumes of data collected in the 1971 Census will be released in a variety of formats during the next few years. The *1971 Census Catalogue,* released in January 1972, by the Statistics Canada Census Division, provides a convenient reference for users of data from the population, housing and agriculture phases of the Census. The Catalogue lists and briefly describes the kinds of information available, the form in which it will appear and the expected date of release.
Copies of the 1971 Census Catalogue, number 11-506, are available, free of charge, from the Publications Distribution Unit, Statistics Canada, Ottawa K1A 0T6.

Bank of Canada Review

In December 1971, the Bank of Canada began publishing its new monthly statistical magazine, the *Bank of Canada Review.* The *Review,* which replaced the *Statistical Summary* offers revised and increased statistical coverage in chart and tabular form. New features are an analytical table showing growth rates for key series and the addition of comprehensive explanatory notes for tables.

As well, the *Review* contains a new section devoted to analytical articles by Bank of Canada officers.

Subscriptions to this new bilingual publication are $10.00 a year. Information may be obtained from the Bank of Canada, Ottawa K1A 0G9.

Staff Changes

Computer Systems Development Division – Former Director of the Computer Systems Development Division, **Mr. N.G. Anderson**, retired in February 1972. Mr. Anderson joined the bureau for the 1931 Census, and, except for military service during World War II, has been employed with Statistics Canada since then.

Replacing Mr. Anderson as Director is **J.I. Weldon,** formerly Co-ordinator of the General Survey Systems Staff. Mr. Weldon is well-known for his pioneering and successful efforts in geocoding and has also developed several user-oriented generalized programs.

The new Assistant Director of Computer Systems Development is **T.W. Hobbs.** Before joining Statistics Canada, Mr. Hobbs worked for a consulting firm, Urwick, Currie and Partners Ltd., where his most recent project was the development and implementation of computer systems for the Quebec medicare program.

In addition to these staff changes, the General Survey System Staff is now part of the Computer Systems Development Division, Economic Statistics Branch.

Merchandising and Services Division – **Mr. I. Altman**, former Chief of Retail Trade Section, Merchandising and Services Division, has been appointed Chief of the Research and Development Section in that Division. The new Chief, Retail Trade Section is **A.R. Tanner** who previously worked as a statistician in the section.

The former Chief of the Research and Development Section, **F.L. Torrington,** is now Assistant to the Director of the Merchandising and Services Division.

Another change in the Division is the resignation of **E.P. Cannon**, from the position of Chief, Integration and Response Analysis Section. Mr. Cannon is now with the Royal Trust Co., Montreal.

Other Appointments

E.A. Hubley has been named Chief, Integration and Development Section, CALURA Division. He was formerly Head of the Taxation and Financial Statistics Unit of this Division.

R.E. Rose has been appointed Director of Production Planning and Control for Statistics Canada. He will be responsible for the implementation of production planning and scheduling systems throughout the bureau. Mr. Rose has recently completed a CAP assignment with DREE, involving the development of a Management Consulting Services Organization in the department.

CATALOGUE 11-005 VOLUME 5 / NUMBER 2 / JULY 1972

STATISTICAL OBSERVER

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STATISTICAL OBSERVER

VOLUME 5 / NUMBER 2 / JULY 1972

The Statistical Observer is a publication designed to contribute toward informing economists, statisticians and related professionals throughout Canada about selected statistical and research developments undertaken in Statistics Canada, in other federal departments and agencies, in provincial departments, in universities and in business and independent research organizations.

Suggestions, contributions of articles for publication, and requests for subscriptions should be addressed to the Editor, Statistical Observer, Statistics Use and Information Services Group, Statistics Canada, Ottawa, K1A 0T6, Canada.

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Evaluation of Canadian Censuses

Introduction

This paper provides a brief summary of a few of the major evaluation projects designed to measure non-sampling errors in the Censuses of Canada. Censuses are particularly vulnerable to non-sampling errors because of the enormous job that has to be carried out in a short period of time, resulting in a great increase in the staff of the statistical offices involved.

Objectives of Evaluation Programs

Four objectives of evaluation programs can be identified:

(a) **Analysis of sources of error with a view to subsequent improvement** – Analyses of sources of error are carried out to identify the most important sources in order to determine the optimal survey design and, hence, be able to make improvements in subsequent surveys.

(b) **The measurement of accuracy of survey results to guide users** – Because statistics are used in making many decisions of great impact in both the private and public sectors, it is important for statisticians to try to guide users on the accuracy of statistics being produced.

(c) **Evaluation of alternative methods of survey design** – The main objective here is not the measurement of absolute levels of error but the measurement of the differences in error levels between the alternatives considered. This measure is used to assist in the selection of the most practical method of surveying; for example, mailout vs. drop-off of questionnaires.

(d) **Evaluation for purposes of continuing control** – This aspect of evaluation falls mainly in the area of quality control which is carried out to identify and remove poor work. However, some quality control plans also point out weaknesses in operating instructions, manuals and procedures.

The remainder of this paper will dwell on various areas of evaluation where such techniques are particularly important to Census operations, namely in the evaluation of *coverage* errors, *response* errors and *processing* errors.

Evaluation of Coverage Errors

In a census, a coverage error occurs when a person or household which, according to the definition, is within the scope of the enquiry is either not included or is included more than once.

Thus, coverage errors result in biases. For this reason, unlike sampling errors, they cannot be estimated from the census itself: their evaluation involves a comparison with an independent, superior standard.

There are three well-known methods of estimating coverage errors in censuses. The method used most often consists of selecting a sample of areas and enumerating these shortly after the census, using particular care to ensure that all households are included in the evaluation survey. This method was tried after both the 1950 and 1960 U.S. Censuses, as well as after the 1961 Canadian Census. Statistics Canada's experience, as well as that of our American colleagues, indicates that this method of estimating coverage errors may grossly understate them, particularly the errors due to missing persons in partially enumerated households.

Another known method of estimating coverage errors is the so-called analytical method. This method uses demographic techniques of age cohort analysis to estimate the current population by age and sex. The main weakness of the method is the way it deals with external migration and persons missed in the previous census. Therefore, it is not particularly suited to "open" countries, such as Canada where these two factors may involve a significant number of persons. Moreover, this method is not capable of estimating coverage errors by regions (at least, in countries such as Canada where internal migration is significant.) Finally, it does not lend itself easily to the classification of the missed persons, except by age and sex, because of the difficulty of establishing a model to predict, with reasonable accuracy, the behaviour of other characteristics over time.

An entirely different method, which has been used with considerable success in Canada after both the 1961 and 1966 Censuses, and now in progress for the 1971 Census, is called Reverse Record Check. It consists of tracing, in the census, a sample of persons selected from several lists (for example, birth and immigration records and previous census files) representing everyone who lives in the country at the time of the census.

When these people are traced to their current address, the census documents are searched to see if they were enumerated there. If not, the potentially missed persons are contacted again to see if they were enumerated at an address other than the one to which they were previously traced. The census records are then checked for these additional addresses.

The main advantage of the Reverse Record Check, compared with the re-enumeration method of estimating coverage errors, is its completely independent approach. It avoids the major problem of evaluating coverage errors; that is, that the evaluation method itself might miss the same persons who were missed in the census. This is much more likely to happen in a re-enumeration study than in the Reverse Record Check since, in the latter method, people who are currently in a critical age group (that is, an age group particularly vulnerable to coverage errors) are selected mostly from the list provided by the previous census at which time they may not have been in this critical age group. Also, in Reverse Record Check, one is trying to locate particular persons rather than carry out vague instructions such as "enumerate everyone".

The Reverse Record Check has several interesting analytical by-products as well. It enables the tabulation of missed persons by the characteristics in the previous census, to the extent they were selected from that source, and furnishes some information on intercensal migration, since it involves matching between consecutive censuses. This method also provides interesting possibilities for assessing the accuracy of age reporting of infants and

smaller children, since part of the study is based on locating a sample of children selected from birth registers. In some cases, the accuracy of reporting country of origin can also be checked because country of origin is known for that part of the sample which is selected from immigration records.

The Reverse Record Check was tried for the first time in Canada in the evaluation of the 1961 Census. It was somewhat of an exploration of the method and therefore, a relatively small sample size, 6,000 persons, was used. This sample size was just large enough to estimate the overall national rate of under-enumeration to within a sampling error less than ± 0.5 per cent (two standard deviations). The actual percentage estimated to have been missed by the 1961 Census was 3.3 ± 0.5 per cent. A much larger study of the same kind was carried out following the 1966 Census (sample size, almost 27,000 persons) permitting a more refined breakdown of the under-enumeration by age and sex.

The percentage of persons missed in the census decreased from 3.3 per cent in 1961 to 2.6 per cent in 1966 – a notable improvement of more than 20 per cent. The main difference between the two censuses was the number of questions to be answered. In the 1961 Census, a relatively long series of questions was asked, whose underlying concepts enumerators sometimes found difficult to explain; whereas in 1966, the number of questions was severely limited. The limited content of the 1966 Census permitted interviewers to concentrate on the coverage aspects of this census, resulting in major improvements. This finding influenced the planning for the 1971 Census methodology.

The Reverse Record Check Study is being repeated for the 1971 Census. There are several new features being added, most important of which is that, having identified the sample of persons who were missed in the census, they will be contacted and asked a series of census-type questions. A tabulation of the results will indicate not only the number of people missed in 1971 but also the impact of their omission on the different census tabulations. This will be an example of guiding users with respect to the reliability of census tabulations. The same data will also enable Statistics Canada to identify the characteristics of persons most likely to be missed by the census, thereby aiding in the search for new methods of census-taking to help reduce under-enumeration in the future.

Evaluation and Measurement of Response Errors

Response errors may occur whenever data are requested, provided, received or recorded. Questions may be misinterpreted by the respondent, or the respondent may not know, may not remember, or may purposely want to distort the correct answer. Different enumerators may ask or explain questions differently, or interpret responses differently. Response errors can be classified into two categories.

(1) **Response Variance** is that component of the response errors which has a chance to cancel over a large number of responses. Some interviewers may tend to inflate a count while others tend to deflate it; some respondents tend to over-state their response to a certain question, other tend to under-state it; some questions on the questionnaire may be ambiguous, or difficult to communicate, and may invite misunderstandings in either direction. All these factors, and many others, contribute to response variance. Because this type of error may be in either direction, the net error from this source may be quite small for large areas, but it can be very large for small areas or rare characteristics. It also tends to be much larger for sensitive characteristics which are normally difficult to measure.

As part of the evaluation program of the 1961 Census, a project was carried out to measure the response variance, particularly the component of the response variance that can be attributed to interviewers. Although this study was restricted to a selected compact area of the country, an area considered to have generally similar characteristics to the remainder of the country, the results had an enormous impact on the procedures eventually adopted for the 1971 Census.

The estimates of response variance derived from this project showed that, on the average, the response variance due to enumerators was of the same magnitude as the sampling variance would have been if the census had been carried out using a 25 per cent sample instead of 100 per cent enumeration. It became quite clear that for many characteristics the contribution of enumerators to the response variance was the largest source of error for small area estimates. As a consequence, it was clear that the census methodology was not in optimal balance with respect to cost and error; that is, if the response variance due to enumerators could be significantly reduced, one could introduce sampling into the census and still achieve a net reduction of errors, at the same time achieving some reductions in cost and a definite improvement in timeliness. As a result of these considerations, plus a good deal of testing, the new methodologies of self-enumeration and sampling for the 1971 Census emerged. The point to be emphasized here is that the methodology of the 1971 Census was influenced in a very significant way by the response variance study. A more comprehensive study of response variance is being undertaken in the 1971 Census to measure the impact of self-enumeration on response variance and to provide tables of the total mean square error for different size of census estimates and for different characteristics, or groups of characteristics, at the regional level.

(2) **Response Bias** is, roughly speaking, that portion of the total response errors which is "left over" after all cancellation involved in the response variance has occurred. It is made up of response errors which have a tendency to occur more in one direction than in the other. Such errors do not cancel out even over large areas or a large number of respondents, and may be particularly significant for statistics at the metropolitan area, provincial or national level. As in the case of response variance, response bias also has a tendency to be much larger for characteristics that are difficult to measure.

Response bias sometimes may be detected, but not measured, on the basis of analyzing departures in the data from hypothetical models (internal consistency analysis). A typical example of this latter situation is the analysis of age reporting. It is observed in many surveys that the number of persons reporting ages ending with a 0 or 5 is unreasonably large in relation to the number reporting ages ending in 9 or 1, or in 4 or 6. Response bias, however, is notoriously difficult to measure or even approximate.

Processing Errors

Errors are, of course, introduced into survey data not only during the reporting of data but also during processing. To minimize such errors, quality control techniques were applied to several operations in the 1971 Census. The most notable of these involved: (a) the enumerators – a sample of questionnaires was selected from an enumerator's assignment and checked; if the enumerator made more than a specific number of errors, the entire assignment was returned for proper completion which may or may not have required re-interviewing; (b) the coders of questionnaires – the work of each coder was controlled by having a different coder independently code a sample of the questionnaires in his workload and comparing and adjudicating all discrepancies; (c) the work of microfilming which precedes the FOSDIC document reading; and (d) the document reading by FOSDIC. In addition to the immediate feed-back into the quality of the census, these control operations provide a wealth of evaluation type data, which will be analyzed from the point of view of future censuses.

This is the first Canadian census in which considerable effort has been put into quality control; however, no evaluation data are available yet. Nevertheless, observations of all 1971 Census operations (including quality control procedures) have indicated the need for a more extensive and intensive quality control program for the 1976 Census. Planning toward this end is already underway.

This article is taken from a paper presented by Mr. A.V. Winkworth at the American Population Association meetings held in Toronto, April, 1972. Readers are invited to contact Mr. Winkworth, Director, Socio-Economic Survey Methods Staff, Methodology and Systems Branch, Statistics Canada, Ottawa K1A 0T6.

Revised Figures

The following article, by Professor. C.A. Moser, Director of the United Kingdom's Central Statistical Office, is reprinted from the **Statistical News**, *and based on an article that first appeared in the London* **Financial Times** *in October 1971.*

Revisions to economic statistics are never long out of the news. This is not surprising as economic statistics are, by their nature, subject to frequent revision. It is the price to be paid for getting out first estimates as quickly as possible and for seeking to improve their accuracy as soon as more information becomes available. Normally, this does not seriously affect the overall pattern of the figures but just occasionally circumstances combine to produce a really large revision which may change the economic picture. This inevitably leads to comment – sometimes hostile – about the revisions; and although this may sometimes be justified, it quite often springs from an incomplete understanding of the nature of statistical estimates. Statisticians are as sensitive to criticism as anyone else and mildly resent suggestions that they can't get their sums right first time. The problem of revisions is far more complex than this and I want to try to clear up some misconceptions and to indicate our current thinking on the subject.

Most people who follow economic developments are aware that statistics are subject to revision. But occasionally one still comes across someone who directly, or in a letter to the press, expresses genuine surprise that, for example, our current balance of payments surplus or deficit for a particular year is no longer exactly £549 million as he had read in a reputable journal only 6 months before. Indeed political legerdemain might be implied. That may be thought to represent a very unsophisticated level of understanding; but it does exist and it provides the natural starting point for a discussion about revisions.

Very few economic statistics can be said to represent the 'fact' of the situation in terms of accounting accuracy. We do not have and would not want to have at our disposal a complete record of the transactions of every firm in the country or of those of our 55 million fellow citizens. Nor do we necessarily have good sample surveys covering every important aspect of economic activity, though the coverage of our data is being constantly improved. What are produced, are the statisticians' best possible estimates of what is happening, or has happened based upon the information that is available to them at the time. And this is the crux of the matter. In nearly all cases, the information will increase and change, sometimes several years after the first estimate is made. If we are to meet our obligation to produce the best possible estimate at any given time, then clearly revisions must be made in the light of this further and more complete information. We are never anxious to do this. It makes life more difficult for users and does not help to generate public confidence in official statistics. But, as I hope this article will show, it is unavoidable. What is a desirable aim however is that the level of the revisions and their timing should follow some clearly defined guidelines and that users should be aware of the limitations of the figures. First, how and

why do revisions come about?

The causes of revisions to statistical series might, for convenience, be divided into short and longer term, although the division is not really as clear cut as that. The 'short-term' revisions relate to the completeness of the information, and it is useful to consider a particular example – the monthly Index of Industrial Production – to illustrate this. For many industries, monthly returns, often providing quite broad information, are collected from a relatively small sample of firms, and, if a publication deadline is to be met, there must be a cut-off point; if, as is usual at that stage, the response is incomplete, the first estimate will be subject to revision as the late monthly enquiries are backed up in many cases by a much more thoroughgoing quarterly survey which provides a more complete coverage and which will, therefore, almost inevitably lead to further revisions to the monthly figures. This pattern cannot be avoided; it would not be right for us to burden all firms with providing all the figures we would like as frequently as every month. For some industries, we in fact have very little monthly information.

Similar revisions occur as quarterly data are replaced by annual. To take one example from our balance of payments statistics: the Department of Trade and Industry conduct a quarterly enquiry into firms' direct investment overseas and their earnings from existing investment; an annual enquiry is also carried out, with a considerably larger sample, producing better – and thus often revised – figures.

Here it is relevant to mention the related problem of the accuracy of these 'final' estimates. Much of our day-to-day work is concerned with very gradual improvements to the component parts of the big statistical aggregates, like the national accounts. Ironically, the more we improve the accuracy of the final figures the greater revisions there may be – other things being equal – to the preliminary estimates. Of course other things do not have to be equal – the preliminary estimates can be improved too – but there are likely to be transitional periods where this is the case. It may well happen with the monthly Index of Industrial Production where, from now on and for some time to come, we shall be introducing the very much improved series of quarterly output statistics.

It is useful to look separately at these 'short-term' revisions because the statistician has a choice here which is not the case with other types of revision. The earlier he chooses to produce the first estimate, the less complete and reliable will be the information available (although, of course, this would be greatly helped if the speed of response from industry were generally improved) and – again other things being equal – the greater, on average, will be the subsequent revisions. Similarly, the more frequent the estimates – monthly rather than quarterly, quarterly rather than annual – the smaller will be the amount of information for the first estimate and, again, the greater the revisions. It does not follow that all efforts to improve timeliness need lead to less accurate figures. There are many ways in which this can be tackled – such as streamlining internal procedures, making more use of computers employing more sophisticated statistical techniques to forecast from partial data – without necessarily impairing the precision. But sooner or later, one must reach the point where one can speed up further only by putting out less complete and thus less reliable figures. And here the statistician has the very real choice between on the one hand faster figures and more revisions and on the other less up-to-date figures and fewer revisions. Clearly there are limits here – it is no use publishing figures very early if they are too unreliable for analysis or interpretation – but still the statistician will be criticised either way. However, a choice must be made. In my set of priorities, greater speed comes top, and we now issue, for example, very quick preliminary figures for consumers' expenditure and are trying to improve timeliness right across the board. This will mean more revisions, but in my view the price is worth paying.

What other forms of revision have in common is that they affect not just the recent figures but the whole series back for a year or several years. They may be of a regular kind. For most seasonally adjusted series the seasonal factors generally have to be revised once a year to take account of the gradual changes in seasonal patterns. This is not always very straightforward. For example, the pattern of consumers' expenditure on cars is affected by extraneous factors such as changes in purchase tax and hire purchase arrangements and, on one particular occasion, a change in the month in which the new registration letter is introduced. Again, composite indices – such as industrial production – are built up by 'weighting' the detailed figures according to the structure of – in this case – industrial output as measured by a periodic census. When a new census is taken and the structure is seen to have altered, clearly the 'weights' of the index must be altered accordingly with consequent revisions throughout the series. The availability of comprehensive data from a census also provides a benchmark from which estimates for more recent years, perhaps derived by extrapolation from annual estimates of wages and salaries in manufacturing industries which are not really firm until final census of production results are available.

Revisions may also occur irregularly and for special reasons. Deficiencies may be discovered in the basic source material – I should think that everyone has heard of the under-recording of exports – and when such things occur, happily very rarely, they must be put right. Another irregular cause of revisions occurs when a new, superior source of information becomes available. Thus, in measuring changes in the production of most plastic goods in the Index of Industrial Production we have, for many years, had to make do with estimates of the industry's purchases of plastic materials. Well, this is better than nothing but it suffers from obvious limitations. A new series that measures directly the sales of plastic goods will soon become available and we shall substitute it for the old one. The Index will be improved thereafter, but the immediate effect will be . . . more revisions.

So, economic statistics represent, for the most part, the best estimates that can be made of the facts of the situation on the in-

formation available at the time; and they will nearly always be subject to revision as more and better information becomes available. There are, therefore, always limitations on the extent to which a series can, and should be used, particularly if it is measuring very small changes over a short period and one of the statistician's main tasks is to inform and educate users in these limitations.

More positively, however, we hope to be able to do more to help users by devising a clear set of guidelines for handling revisions, but the way ahead is not easy and there are no quick and simple solutions. There is, for example, the question of the timing and frequency of revisions. On the one hand it is desirable to try to produce the 'best' figure at any given time by continually revising as new data come to hand and as new series become available; taken to its limit, this could involve issuing revised figures every day in some cases. Against this, one obviously does not want to irritate users with constant changes and discontinuities. Should revisions therefore be made at fixed time intervals?

Alternatively, should revisions be made whenever the change amounts to more than a certain percentage? It can be very annoying to see series revised for trivial amounts that are well within the margin of error of the estimate. In trying to find an acceptable rule, however, one runs into problems with the big economic aggregates like the national accounts. These estimates are built up, bit by bit, from information obtained from different statistical enquiries, the results of which may be published independently of the total national accounts. A revision to one of these series – let us say the capital expenditure of the iron and steel industry – may be important in relation to that industry and will have to be published. In terms of total GNP it may be trivial; but to keep the figures consistent this must be revised too, albeit by an apparently insignificant amount. There is the question too of how far back we should revise. Occasionally, for example, there is change in classification which will necessitate revisions to a particular series. A decision must be taken on how far back we are obliged to carry the revisions in order to provide an uninterrupted series for users.

More difficult still is to determine what are tolerable limits for the size of the revisions; and consideration of this must be linked with the more complex problem of the margin of error of the 'final' estimate. The main problem is that economic statistics are put to many and varied uses and a certain margin of error may be acceptable for one purpose but not for another.

We are now looking at all of these aspects and, in seeking criteria, we shall certainly consider experience in other countries. Attempts to work out guidelines for the release of principal economic indicators are at present being made by government statisticians in the United States. They have three main objectives. The first is to ensure that revisions to preliminary estimates are not unacceptably high in relation to the actual month-to-month or quarter-to-quarter changes in the final estimates. The second aims to achieve an acceptable standard of accuracy for the final estimates in relation to the underlying movement. If any series does not match up to these criteria, a decision would be required on whether to spend money to improve it (and incidentally add to the burden of form filling) or whether to discontinue it. The third objective is to reduce the number of revisions by regulating the number of estimates that can be issued for a particular series within a given period of time. We have already had discussions with our friends in Washington about this and we shall watch closely to see how these developments work out in practice.

As I have made clear, we shall always and inevitably have revisions to contend with and this must be more widely recognised and understood. But a clear, consistent and generally acceptable basis for dealing with them should help to make life less difficult for all users and it is our intention to progress toward this end.

NEW PROJECTS

1972 Survey of Selected Leisure Time Activities

In March 1972, Statistics Canada conducted a survey of selected leisure time activities of Canadians – the first project of this kind on a national basis in Canada. With co-ordination and general direction provided by the Cultural Information Section of the bureau's Education Division, the survey was carried out as a supplement to the March 1972 Labour Force Survey and was funded in part by the Arts and Cultural Support Branch of the Department of the Secretary of State. The survey enquired into participation in activities and attendance at events during the two and one-half month period ending mid-March 1972.

The primary objective of the leisure time study was to provide a wide range of users (most particularly, federal departments involved in support programs) with estimates of attendance and participation in the arts, adult education, recreation and some forms of popular entertainment. The study **was not** designed as a time-budget survey; that is, no attempt was made to measure the amount of non-work time available to Canadians.

A secondary objective of the leisure time survey was to provide the groundwork and some benchmarks for an expanded program of studies in the area of leisure activities of Canadians.

Because the leisure time survey was linked with the regular monthly Labour Force Survey, estimates of attendance and participation can be made at the national, regional, and provincial levels, for twenty defined age-sex groups. Correlations with population density, some socio-economic variables, and some personal characteristics of the population can also be made.

Processing the survey's individual reports from about 65,000 respondents was completed in May, and a linked leisure time-labour force record has been produced for each respondent. Some preliminary tabulations are now available; other more detailed classifications will be made available in special releases of Statistics Canada.

The following are a few examples of the kind of information derived from the leisure time survey:

- estimated attendance (and percentage of population) at live theatre, ballet, classical musical performances, popular music performances, museums, art galleries, cinema, sports events, etc., with differentiation between free events and events for which admission was charged;
- estimates of the weekly time spent watching television, listening to radio, tapes, records, etc., reading, participating in hobby activity, in recreational sports activity, etc.;
- estimates of the numbers enrolled, and the amount of time spent per week, in continuing education courses, in hobby or general interest courses and in formal instruction in performing and creative arts;
- estimates of the number of Canadians who participate in specific sports and recreation activities such as skating, cycling, jogging, snowmobiling, recreational hockey, etc.

Readers interested in more information on the survey of selected leisure time activities are invited to write to J.E. Wicks, Chief, Cultural Information Section, Education Division, Statistics Canada, Ottawa, K1A 0Z5.

Two New Census Dissemination Services

The Data Dissemination Section of the Census Division was created to provide users of census data with a centralized and comprehensive range of user services. One feature of this section is a Census User Enquiry Service – a focal point within the Census Division for processing user enquiries. The Service will answer user requests or, if necessary, direct the questions to appropriate Statistics Canada staff members.

Another project of this section is the Census Data Newsletter, established to inform users of developments in the dissemination of data from the 1971 Censuses of Population and Housing, and Agriculture. The first Newsletter, released in May 1972, described the documentation being prepared for the Data Dissemination Program. Future issues will deal with other aspects of the program such as the User Summary Tape Program, the procedures for answering special requests and geocoding.

Information about these and other Census programs may be obtained from the Census User Enquiry Service, Statistics Canada, Ottawa K1A 0T6. The telephone number is 613-996-5254.

Developmental Endeavours of the Governments Division in 1972-73

The 1972-73 fiscal year will be an active period of development for the Governments Division of Statistics Canada. This Division, part of the Financial Statistics Branch, is responsible for collecting, processing and publishing statistics on the financial transactions of governments and government enterprises.

Early in 1972-73, the Director of the Division and senior statisticians of its Local Government Section attended the annual federal-provincial conference on municipal statistics sponsored by Statistics Canada. The Conference was held in Victoria, B.C., April 19-21, and concerned itself extensively with the implementation of the classifications described in the recently issued *Financial Information System for Municipalities* (catalogue numbers 12-532, 12-533 and 12-534, occasional). Among the topics discussed were problems encountered in the implementation of the system and improvements in the collection of municipal data. The delegates from Statistics Canada also informed their provincial counterparts of certain initiatives about to be taken by the bureau in the area of local government financial statistics. These Governments Division initiatives relate to the development of a local government debt data bank, the gathering of information on local government enterprises, and the delineation of the local government universe.

The local government debt data bank will be a computerized perpetual inventory of all local government debt transactions. It will generate a highly flexible output on all significant aspects of new and existing bond and debenture issues of local governments. The system is being developed one province at a time.

The objective of the project to gather information on local government utilities is to produce data on local government enterprises comparable with those already produced on federal and provincial government enterprises. At the outset, the project will be based on highly aggregated information already supplied by local government utilities to other divisions of Statistics Canada.

The questionnaires from which the information is now extracted will be expanded, as necessary, to suit the requirements of the project.

The delineation of the local government universe is a much needed undertaking. At present, serious difficulty is encountered in relating results of sample surveys on local government financial transactions to total data because of lack of knowledge on the dimension of the universe. The first attempt to remedy this shortcoming takes the form of a survey of all metropolitan areas to try to identify their local government entities and to seek information on the services they provide. The financial relationships which exist among these entities, and between them and other levels of government will also be examined. In many instances, this project will be carried out jointly with the provincial departments of municipal affairs.

In mid-1972, the Governments Division plans to release the publication, *The Canadian System of Government Financial Management Statistics* (catalogue number 63-506) which will outline the coverage, concepts, methods, and classifications used in the preparation of data on the financial transactions of governments and government enterprises. It will contain comprehensive explanations of the statistical treatment of these transactions within the system and among the various components of the system. The revenue, expenditure, asset, liability, and sources and uses of funds classifications for governments, and the income, expenditure, asset, liability, and net worth classifications for government enterprises will be described in detail. The report will also provide a description of reconciliations of the data of this system with the corresponding data of the System of National Accounts.

Data on the revenue and expenditure estimates of the federal government will be released in another Governments Division publication in 1972-73. This report will be a companion to *Federal Government Finance* (catalogue number 63-211) and will extend the revenue and expenditure series of the latter publication to the present by making use of information contained in the federal estimates and budget speeches and in special releases on the anticipated transactions of certain federal special funds.

More information on these and other Governments Division activities may be obtained by contacting J.B. Smith, Director, Governments Division, Financial Statistics Branch, Statistics Canada, No. 5 Temporary Bldg., Ottawa, K1A 0Z7.

NEW REPORTS

Census Research Memoranda

The Population and Housing Subdivision of the Statistics Canada Census Division has produced a series of research memoranda covering many aspects of the 1971 Census. The following list gives the number, author, title and date of papers produced to date. (Numbers omitted from the list correspond to papers now out of print). Readers wishing to obtain copies of these papers and/or any related information may contact the Census User Enquiry Service, Statistics Canada, Ottawa, K1A 0T6.

General Series (PH-Gen-)

0. Freedman, H.A., "Index of Population and Housing Research Memoranda" (periodically updated)
1. Davy, R.J. and Freedman, H.A., "The 1971 Census of Population and Housing Publication Programme: Content and Time-table" (May 10, 1971)
5. Freedman, H.A., "The Role of the Population and Housing Sub-division in the 1971 Census Dissemination Programme" (Nov. 19, 1971)
6. MacIntosh, D.A., "1971 Census Methodology" (Dec. 1, 1971)
8. Dodds, D.J., "Sampling in the Self-enumeration Areas of the 1971 Census" (Dec. 1, 1971)
9. Brackstone, G.J., "The 1971 Census Weighting Procedures" (Dec. 1, 1971)
11. Freedman, H.A., "The 1971 Census Dissemination Programme" (June 2, 1972)
12. Census Division, "Content of Questionnaire for the 1971 Census of Canada" (March 1970)
13. Davy, R.J., "An Overview of the 1971 Census of Canada" (June 12, 1972)

Methodology and Systems Series (PH-Meth-)

1. Murphy, E.M., "The Random Rounding Technique for Guarding against Illegal Disclosure in Published Census Tables" (May 29, 1972)

Demographic and Social Characteristics Series (PH-DC-)

2. Bradley, D.R., "Demographic and Social Characteristics Questions, Censuses of Canada, 1871-1971" (Nov. 19, 1971)

Family Series (PH-Fam-)

1. Gauthier, Herve, "The Census Definition of Family: 1871-1971" (May 1971)

Housing Series (PH-Hou-)

2. Priest, G.E., "The 1971 Census of Housing: Information for Census Data Users" (Nov. 19, 1971)

Household Series (PH-Hhld-)

2. Singh, H., "An Integral Framework of the 1971 Census Household and Family Statistics" (Nov. 19, 1971)

Economic Characteristics Series (PH-Ec-)

2. Samlalsingh, R., "A Guide to Economic Characteristics Concepts, 1971 Census" (Nov. 19, 1971)

Place of Work Series (PH-PW-)

1. Simpson, J.K., "Place of Work in the 1971 Census" (Nov. 19, 1971)

Geography Series (PH-Geog-)

1. Ricour-Singh, F., "Census Geostatistical Areas" (Dec. 15, 1971)
2. Lefebvre, J.J. and Terjanian, A., "The Census Geographic Code: Hierarchy and Documentation" (Dec. 15, 1971)
3. Hubert, P., "Reference Maps of the 1971 Census of Canada"
4. Page, R.S., "Census Thematic Maps Using Computers" (Nov. 19, 1971)

Another report closely connected with the Geography Series is contained in the booklet, *GRDSR: Facts by Small Areas,* released by the Methodology and Systems Branch. This report introduces the GRDSR (Geographically Referenced Data Storage and Retrieval) system as a method of assembling statistical information by user-specified areas. The booklet can be obtained from the Census User Enquiry Service or from the Methodology and Systems Branch, Statistics Canada, Ottawa, K1A 0T6.

QBS Series on Fixed Capital Formation

The Investments Division of the Quebec Bureau of Statistics is producing a series of reports on gross fixed capital formation in Quebec in 1969. The Bureau plans 28 bulletins, corresponding to the major industrial groups as defined in the Standard Industrial Classification. Included are the primary sectors, major groups of manufacturing activity, construction and transportation sectors as well as public utilities and business and financial services.

The information in these publications is expected to be most useful to those concerned with the equipment goods market in Quebec, particularly producers and dealers of such goods and industrial promotion staffs.

All bulletins in this series are expected to be released by late 1972.

A list of titles in the series and copies of the bulletins are available from the Bureau de la Statistique du Québec, Ministère de l'Industrie et du Commerce, Hôtel du gouvernement, Québec 4, P.Q.

Alberta Business Trends

The Alberta Bureau of Statistics has compiled data from many sources to produce a report on the performance of Alberta's economy during 1971 and the first quarter of 1972. This compact bulletin, entitled *Alberta Business Trends* uses tables, charts and text to present facts on such economic indicators as the labour force, farm cash receipts, retail trade, bank transactions, building permits, manufacturing shipments and many others.

Alberta Business Trends, May 1972 is a publication of the Alberta Bureau of Statistics, Department of Industry and Commerce, Government of Alberta, Edmonton, Alberta.

Ontario Economic Review

Two recent issues of the *Ontario Economic Review* report on some newly-completed projects of the Ontario Department of Treasury and Economics. The January/February 1972 issue contains a review of economic activities in Canada, and Ontario, in 1971 and a forecast for 1972, prepared by the Economic Planning Branch of the Policy Planning Division.

The feature article in this issue describes the recently-completed input-output model of Ontario's Niagara Region. The paper outlines the conceptual framework for the model and includes a brief description of the underlying methodology. The three basic matrices – the inter-industry flow table, the matrix of input-output co-efficients and its inverse – are examined in the article and are presented in tabular form in the Appendix.

In the March 1972 *Special Supplement* to the OER, there is a report of a study which uses the input-output system for Ontario as the basis for a detailed analysis of some of the economic and technical implications of sectoral interdependencies in the Ontario economy.

The Ontario Economic Review is published bi-monthly by the Ontario Department of Treasury and Economics. Copies may be obtained free of charge by writing to J.J. Morning of that Department at Room 545, Frost Building South, Queen's Park, Toronto, Ontario.

Census Summary Tapes Documented

The data collected in the 1971 Census is being disseminated in many forms. One of the newest methods is the user summary tape program . These User Summary Tapes (UST) are designed especially for the user, in contrast to production summary tapes which are intended for internal bureau use. There is now available a report documenting the subject-matter content of these tapes and indicating the types of geographic area to which the data relate. The report, *1971 Census User Summary Tape Content,* is available from the Population and Housing Subdivision, Census Division, Statistics Canada, Ottawa K1A 0T6.

Inquiries about this paper may be directed to H.A. Freedman or the Census User Enquiry Service at the above address.

ANNOUNCEMENTS

New Chief Statistician

Dr. Sylvia Ostry was appointed Chief Statistician of Canada, effective June 1, 1972. Since 1970, Dr. Ostry had been Director of the Economic Council of Canada. A native of Winnipeg, Dr. Ostry attended McGill University in Montreal where she obtained Bachelors and Masters degrees in economics. After further study at McGill and Cambridge University, she received a doctorate in 1954.

Dr. Ostry taught at McGill from 1948 to 1955, then at Sir George Williams University; she was assistant professor at McGill from 1958 to 1962; and associate professor at the University of Montreal from 1962 to 1964. Dr. Ostry has engaged in a variety of research activities in association with the Department of Labour, the Special Senate Committee on Manpower and Employment, University of Oxford Institute of Statistics and CMHC among others. At Statistics Canada, she was the assistant director of the Labour Division from 1964 to 1966, and she acted as a special advisor on manpower for the Economic Council of Canada. In April 1969, she was appointed Director of the Economic Council of Canada.

New staff members in Dr. Ostry's office include **R. Desramaux** and **L. Joyce**. Mr. Desramaux, executive assistant to Dr. Ostry, was formerly with the Personnel Administration Division of Statistics Canada. His duties as executive assistant will primarily involve liaison with the office of the Minister of Industry, Trade and Commerce, officials of other government departments and of Statistics Canada.

As the Chief Statistician's research assistant, Ms. Joyce, who is trained in economics and has worked with the Economic Council of Canada, prepares background information for speeches and reports, and handles Dr. Ostry's communication with and involvement in outside organizations.

Walter Duffet Retires

Mr. Walter E. Duffett has retired after 15 years as head of Canada's central statistical agency. He was appointed to the position of Dominion Statistician (the title was changed to Chief Statistician in 1971) in January 1957, on the retirement of Mr. Herbert Marshall.

Mr. Duffett graduated in Economics from the University of Toronto in 1933, and continued his studies at the London School of Economics where he obtained an M.Sc. degree in 1935. On his return to Canada, he jointed the Investment Department of the Sun Life Assurance Company of Canada in Montreal, where he was concerned with economic and financial studies of a variety of foreign countries and with substantial investment operations in these countries.

From 1942 to 1944, Mr. Duffett served in the Economics Branch of the Wartime Prices and Trade Board in Ottawa. He was involved in the development of statistical series required for wartime civilian supply administration and also participated in policy development in these fields. Subsequently, he was involved in the gradual dismantling of the wartime price controls.

In 1944, he joined the Research Department of the Bank of Canada and became an Assistant Chief of the Department. He participated in the development of the conceptual structure underlying the first set of comprehensive national accounts for Canada, later published by the Dominion Bureau of Statistics (now known as Statistics Canada). His main duties related to economic and financial studies of developments in Canada and the United States.

In 1954, Mr. Duffett was appointed Director of the Economics and Research Branch of the Department of Labour, where he was in charge of studies of employment conditions, wage rates and industrial relations. He moved from this position to become head of the bureau.

As Chief Statistician of Canada, Mr. Duffett was in charge of one of the largest statistical agencies in the world, with a continuing staff of more than 4,500 persons. With the increasing use of statistics for decision-making by business and government, and by the public, the central statistical agency has grown rapidly in recent years. Even taking into account the fluctuating personnel requirements of the census of population and agriculture, the staff is more than 2.5 times as large as it was in 1957 and, with rising prices and wage rates, the budget is more seven time the 1957 expenditure. Pressures for growth reflect the need for more precise and detailed information than was previously the case, but also stress the growing importance of educational, cultural and other social spheres.

Mr. Duffett is a member of the International Statistical Institute, is a Fellow of the American Statistical Association and has served as Canadian delegate to the United Nations Statistical Commission and numerous other international statistical meetings. He has been an active member of the Social Science Research Council for many years and is a member of the National Advisory Committee of the Canadian Institute of International Affairs. He has been active in the Interamerican Statistical Institute and in its committees which work closely with the Organization of American States.

Mr. Duffett now begins a new career as a vice-president of the Conference Board in Canada. In view of the Board's objective to increase its members' access to good information for decision-making, Mr. Duffett's experience as head of Canada's largest information-producing agency will be of especially great value to that organization.

R.H. Bradley Seconded to Manitoba

At the request of the Honourable Leonard S. Evans, Minister in charge of the Manitoba Bureau of Statistics, Mr. R.H. Bradley, Chief, Comparative Living Costs Section, Prices Division, Statistics Canada, is on loan to the Manitoba Government for a period of one year commencing July 1, 1972. Mr. Bradley will assist in the organization of the new Manitoba Bureau of Statistics, which is established on legislation closely resembling the federal Statistics Act, and permitting maximum co-operation between the provincial and federal agencies.

It is not the intention of the Manitoba Government to duplicate in any way the work done by Statistics Canada but rather

to make fuller use of the data available from Statistics Canada, and to assist wherever possible in collecting the required statistics for the use of all Canadians. Initially, emphasis will be placed on participation in the co-operative federal-provincial 1971 Census Data Access Program.

Mr. Bradley comes to the Manitoba Government with an extensive background in the fields of public utilities, transportation and price statistics, and with considerable experience in statistical compilation and collection. Before leaving on his new assignment, Mr. Bradley, aided by the staff of Provincial Liaison and Consultative Services, studied the various areas of Statistics Canada's operations which are concerned with federal-provincial statistical activities.

I. McWhinney Retires

Miss F. Isabel McWhinney of the Prices Division, Statistics Canada, retired at the end of June from her position as Chief of the Family Expenditure Section. A graduate of the University of Saskatchewan, Miss McWhinney jointed the Public Service of Canada in 1936 in the Census Division of the Dominion Bureau of Statistics (now Statistics Canada). Her 36-year career in the public service was almost entirely with the bureau, where she rose steadily through positions of increasing responsibility.

During the period from 1940 to 1956, her progressive contributions in the field of prices were impressive and wide-ranging, covering wholesale, security and farm indexes. In 1956, Miss McWhinney became Chief of the Family Expenditure Section – a group established to develop and implement a program of continuing biennial surveys of families and their expenditure patterns. Beginning as a series of small-scale urban surveys, the program was aimed at providing needed data on expenditure levels and patterns of characteristic family groups, according to income, family composition and other characteristics. The build-up of continuing expertise and methodological improvements also formed the essential base for Canada's first successful **national** survey of family expenditures, in 1969, covering farm, rural non-farm, and small and large urban centres. Miss McWhinney's leadership and professional guidance in this very difficult type of survey were essential and substantial.

Her legacy to her colleagues is the demonstration that not only can difficult tasks be very successfully undertaken, but also that they can be borne more easily with a penetrating wit and a gracious concern for others.

Appointments

T. Collier, former Provincial Liaison Officer in Edmonton has been appointed Assistant to Mr. V.R. Berlinguette, Director General of the Economic Statistics Branch.

L. Sonkodi, former Chief, Wholesale Trade Section, Merchandising and Services Division, joined the Fisheries Services, Department of the Environment, as a Senior Marketing Economist on April 1, 1972.

A. Jordan, has been named Assistant Director of the Computer Systems Development Division with responsibility for the systems and programming work for the Administration, Economic Accounts, Financial Statistics, and Methodology and Systems Branches. A native of England, Mr. Jordan has been involved in systems analysis and development for many years. His most recent position was Manager of Systems Development for Canada Permanent Trust.

J.G. Stinson has been appointed Chief, Data Dissemination Section, Census Division. Before taking this position, Mr. Stinson was Statistics Use Development Officer for the Vancouver region.

E.M. Murphy has been named Chief of Regional Research of the Regional Statistics Research and Integration Staff, Integration and Development. Dr. Murphy had been Chief, Data Dissemination Section, Census Division.

F.G. Boardman has retired from his post as Chief, Demographic and Social Characteristics Section, Census Division.

A.D. Holmes, Director of Prices Division, who has completed 35 years of service with the bureau, is resigning from his position effective September 1, 1972. However, before his retirement, Mr. Holmes has consented to stay with Statistics Canada to undertake a special assignment – a comprehensive study of Canadian price statistics research and development. This study will concentrate on unresolved conceptual and methodological issues in price measurements but will also deal with the scope and nature of future price statistics programs.

W.M. Illing has been appointed Director of Prices Division, replacing Mr. Holmes. Mr. Illing comes to Statistics Canada from the Economic Council of Canada. At the Council, Mr. Illing had been engaged in economic analyses in various areas including housing, labour, industry, wages and prices. He was also involved in the CANDIDE econometric model project, having responsibility for several blocks – prices, employment, wages, demography and labour force.

Census Geostatistical Areas *

The traditional function of the Census Division's Geography Section is to delineate the statistical areas for the collection and presentation of census data. The areas created or adopted are used in all publications and computer print-outs produced by the census. The object of the following report (1) is to show how the section established a coherent system of statistical units at the national level, at the same time respecting the obligation to provide the provinces with data on as many types of areas as possible which they consider official.

Statistical areas can be classified in two ways: according to their hierarchical rank in the territorial subdivision; or, according to the extent of participation of Statistics Canada in determining their boundaries. In this report, we shall choose the first approach and, as we go along, specify in each case the degree of the bureau's participation.

Provincial Level

The most complicated data and cross-classifications are available at the provincial level. In addition, for certain more complex tables, and also for the breakdown of long tables into bulletins, Canada has been divided into six regions. Three of these regions, Quebec, Ontario and British Columbia, contain one province only. The Maritimes and the Prairies correspond to the traditional concept, and the last region groups the Yukon and Northwest Territories.

Multimunicipal and Intraprovincial Level

For census purposes, there are three main types of areal divisions in the provinces, all comprising individual municipalities. These areas are neither equivalent to nor comparable with one another because they were established for different purposes.

(1) Electoral Purposes

Through the Representation Act, the federal government divides the provinces into electoral districts. These electoral districts serve as a base for the creation of enumeration areas which are used for the collection of census data. Thus, although electoral districts are not statistical areas, the census must recognize them and provide data for them. In fact, the "legal reason" for the decennial census is to determine changes in population distribution as a basis for the revision of the federal electoral map. For the 1971 Census, the total population count, and the population count of the previous census, within each electoral district will be published (catalogue number 92-703) so that an historical comparison can be made. Distributions of the population, on the basis of age, marital status, language etc. for each electoral district will be available at nominal cost on special data sheets.

(2) Administrative Purposes

The provincial governments of Prince Edward Island, Nova Scotia, New Brunswick and Quebec have divided their territory into units called "counties". In British Columbia, a recent revision of the administrative structure led to the creation of regional districts which are considered, for statistical purposes, as equivalent to counties. In Ontario, in addition to the traditional counties, there are "regional municipalities" and "district municipalities" which are treated as counties in the tables.

In some provinces, there is no administrative level between the province and the municipality. This is why Statistics Canada, in collaboration with the provincial governments, has created census divisions in Alberta, Saskatchewan, Manitoba and Newfoundland for which it provides the same data as for counties.

On the whole, counties and their equivalents are stable units which are very useful for the preparation of historical series. However, it will be impossible to make a comparison between the former divisions and the new regional districts in British Columbia, except for the total population counts.

(3) Statistical Purposes

Statistics Canada determines the boundaries of census *metropolitan areas* and census *agglomerations.* These are also multimunicipal entities which, unlike the others, exist only in major urban centres and their fringe areas. They are used in presenting data for urban areas where the municipal boundaries are too arbitrary for data by municipality to be meaningful.

Census Metropolitan Areas – A metropolitan area for census purposes is the main labour market for a densely built-up area with a population of 100,000 or more. It corresponds to the commuters' area. Since there was no place-of-work data available when the delineation was made, the following criteria were used as a basis: distance to the built-up area, structure of the labour force, and population increase. Only complete municipalities or subdivisions are included in a census metropolitan area.

The systematic application of constant criteria within the country raised two problems: comparability and uniformity. The problem of comparability stems from the difference between 1966 and 1971 boundaries. However, a bulletin will give the population count of the previous census for the 1971 delineation.

The problem of uniformity stems from the reaction of local governments. More and more, large cities or urbanized areas have planning boards, which are large users of statistical data. These agencies would like to see their planning regions or areas recognized. However, the criteria for delineating planning regions differ from one area to another. To compare data of one urban area with those of another, Statistics Canada had to use constant criteria, sometimes at the prejudice of local interest*(2)*.

Many tables are available for census metropolitan areas. However, several breakdowns of these areas are adopted depending on the amount of detail in a given tabulation. Often only totals for the entire metropolitan area are given; sometimes a distinction is made between "urbanized core" and "fringe", that is, the remainder of the metropolitan areas; and, in some cases, statistics are shown for each municipality within the metropolitan areas. The publications provide more details by metropolitan area than by county (or division) but less than by province. There were 22 metropolitan areas for the 1971 Census, compared with 19 in 1966, the new ones being Chicoutimi-Jonquière, St. Catharines-Niagara and Thunder Bay.

Census Agglomerations – The census agglomeration concept closely resembles that of the census metropolitan area because it

** A number of printing errors in the April issue necessitated the reprinting of this article.*

deals with urbanized areas only. However, the difference lies in size and in some delineation criteria. The population of agglomerations ranges from 2,000 to 100,000 whereas in metropolitan areas, by definition, it is 100,000 or more. For the delineation of census agglomerations, only the first step used for the delineation of census metropolitan areas is applied; that is, inclusion of the municipalities completely or partly located in the continuous built-up area. First, a study is made to determine whether, outside an urban municipality with a population of 1,000 or more and a density of 1,000 or more persons per square mile, there is densely built-up area with a population of 1,000 or more and a density of 1,000 or more inhabitants per square mile. In such a case, the central urban municipality and the built-up fringe are considered as the urbanized core of a census agglomeration. The area of any complete municipality or other subdivision which satisfy these criteria is included, wherever possible in the census agglomeration.

In 1966, the delineation of agglomerations with populations ranging from 2,000 to 100,000 had already started. However, they had different names depending on their size. Agglomerations where the central city had a population of 25,000 or more were called "major urban areas" and their data appeared in the regular publications. Agglomerations with 25,000 or less were called "urban areas" and data were available in special tables, only by request. Furthermore, the 1966 urban areas were only parts of municipalities which made it difficult to make comparisons with data from sources other than the census.

For the 1971 Census, 86 agglomerations were delineated. Availability of data by census agglomeration depends on the size of the agglomeration. Data for agglomerations of 25,000 will appear in the regular publications. Data for agglomerations of 25,000 to 10,000 will be available in special tables in the form of computer print-outs and more restricted variables will be available in this form for agglomerations of fewer than 10,000. However, a special bulletin will give selected variables for all the census agglomerations in Canada.

Municipal Level

The census provides large amounts of data by municipality. However, municipal boundaries often change from one census to another because of amalgamations and annexations. The "Historical" bulletin (catalogue number 92-702) gives the population count of the previous censuses for each municipality. For each census, the boundaries in effect at the date of that census are used for the population count. When boundary changes affect the comparability of data, footnotes give the explanation of the change that has taken place. In addition, the Geography Section publishes an annual report on the changes in municipal boundaries which gives the 1966 population and area of the annexed region. These two procedures tend to reduce the problem of the comparability of historical data by municipality.

(1) Cities, Towns, Villages and Other Municipalities

The criteria determining whether a municipality is a village, town or city vary from one province to another. Nevertheless, the census respects this distinction in its publications, although considering these three types of municipalities as equivalent. The same procedures apply to the five boroughs of metropolitan Toronto.

The municipalities to which departments of municipal affairs have not conferred the status of city, town or village have names which vary from one province to another. The following is a list of a few types of municipalities and the provinces to which they apply.

Parish	: Québec, New Brunswick
Rural municipality	: Manitoba, Saskatchewan
Township	: Québec, Ontario, Prince Edward Island
Improvement district	: Alberta, Ontario
Municipal district	: Alberta, Nova Scotia
Local improvement district	: Saskatchewan, Newfoundland Northwest Territories, Yukon
County	: Alberta (not to be confused with the county at the multimunicipal level)

For statistical purposes, all these municipalities are considered equivalent and their names synonymous.

Most of the tables published do not include all the municipalities because there would be too many. Tables are generally prepared for the cities, larger towns and villages and other municipal subdivisions of similar size. However, in many cases, the data for the smaller subdivisions are available on request.

(2) Other Census Subdivisions

The term "subdivision" may sometimes have a more limited meaning than a municipality and describe a statistical area created by Statistics Canada in co-operation with the provinces. In some provinces or territories such as Newfoundland, the Yukon and Northwest Territories, there are vast areas which have not been organized into municipalities. Since it may not be sufficiently useful to give only a single total for such large areas, the bureau, in co-operation with the provinces, has subdivided these territories in some cases. The resulting subdivisions have neither administrative nor legal status but serve as equivalents for municipalities for statistical purposes only.

Nova Scotia is a somewhat special case. In this province, each county contains cities, towns or villages but the rest of its territory constitutes a single rural municipality called a "municipal district". The bureau has also established subdivisions in these municipal districts of Nova Scotia in order to maintain comparability with the provinces which have a large number of rural municipalities or whose unorganized territory has been divided into subdivisions by the bureau.

Municipalities sometimes change boundaries from one census to another. The same phenomenon occurs, although less frequently, in the case of census subdivisions. Hence, the 1971 Census data will be based on new subdivisions in Newfoundland and British Columbia.

(3) Unorganized Territories and Indian Reserves

Most of the provinces – except New Brunswick, Nova Scotia and Prince Edward Island – have territories which have not been organized into municipalities. When this territory is not divided into census subdivisions, the data will appear as a total for the

"unorganized" portion of each county or its equivalent. To permit a more detailed study of these unorganized territories, the bulletin on unorganized townships gives data for areas which were originally established exclusively for surveying purposes in the Prairies and in northern Ontario and Quebec.

Indian Reserves have a special place in the hierarchy of census statistical areas. Indian Reserves do not have municipal status but they are counted separately even if they are located within the geographical limits of a municipality. In the published tables, data for all Indian Reserves in a given county or census division are combined and presented as for a separate "municipality".

Intramunicipal Level

Most of the statistical areas mentioned so far have been delineated by agencies other than Statistics Canada, but the bureau has adopted or recognized such delineations. Up to the 1941 Census, it was felt that the most detailed level for which statistics could be produced was the municipal level. Since then, there has been a trend toward giving increasingly more detailed information on areal units. This stems from the fact that users are conducting more and more detailed studies and wish to get away from the arbitrary framework of municipal boundaries. In considering the intramunicipal units, we shall proceed from the largest to the smallest.

(1) Census Tracts and Area Aggregates

Since 1941, metropolitan areas and other urban centres of 50,000 or more have been subdivided into census tracts – small statistical areas of comparable population, clearly defined physical boundaries, and homogeneous socio-economic characteristics. The boundaries of these tracts have varied from one census to another according to changes in population distribution and in highway and railway patterns. However, the 1971 Census saw the establishment of a numbering system which will make it possible, through suffixes, to integrate future changes and also to facilitate the preparation of historical series. Conversion tables have been prepared for previous years, which will make it possible to go as far back as the origin of census tracts. (For details on the definition, the method of delineation, and the role of local committees in the delineation of census tracts, see the *Census Tract Manual,* available from the Geography Section, Census Division.)

Each census tract is identified individually by the geographic code. For each census tract city or metropolitan area, a special bulletin will provide a substantial number of variables by census tracts. (See the Census Tract Series in the *1971 Census Catalogue,* number 11-500.) There will also be special computer summary tapes for the census tracts as well as data on computer print-outs.

The census tract is a purely urban statistical area. When summary tapes were prepared for the 1971 Census, it was realized that the enumeration area level would be too small to guard confidentiality in detailed tables. Nor could the problem be resolved by using the municipal level because some municipalities, especially in Quebec, contain only one enumeration area. Hence, there was a need to establish a coherent system of statistical areas at a level comparable to a census tract, but covering the whole country. Each unit, called an "area aggregate", has a population ranging from 4,000 to 6,000, approximately comparable with a census tract. Its boundaries must respect a number of other statistical units according to lists sent to us by users, particularly by the provinces. They do not necessarily follow municipal boundaries but, in areas divided into census tracts, they will preferably follow such boundaries. The "area aggregate" may prove very valuable in the preparation of historical series, since the intention is to keep boundaries permanent.

No publication will give data for "area aggregates"; the sole purpose of this statistical area is the summary tape program.

(2) Enumeration Areas

The entire organization of the census is based on the delineation of enumeration areas. These areas usually represent the territory an enumerator can cover in the period assigned to him. Several criteria are considered in the delineation of enumeration areas:

- population: maximum of 200 households or 100 farms;
- boundaries recognizable in the field: waterways, railways, roads;
- homogeneous rural or urban character;
- easy accessibility to every part of the territory;
- respect for the boundaries of other statistical or administrative areas.

The first population counts are made by enumeration area. However, no data are published on this basis; the data will be made available in the form of computer print-outs, special tables or microfilm. Another important dissemination medium will be computer summary tapes containing tabulated data by enumeration area, from which the user can build, with the use of a computer, the area required.

Although data are available for these levels, enumeration areas are nevertheless more operational units than statistical units, because they are not stable enough to permit historical comparability. At every census, the boundaries and the numbering of enumeration areas change since the essential factor of delineation is the population size in relation to the enumeration workload. The Geography Section is preparing conversion tables in order to follow the enumeration areas from one census to another.

The boundaries of enumeration areas sometimes surround, sometimes include, unincorporated places of five or more dwellings within rural municipalities, known locally by a specific name but not officially delineated, or administered by a municipal council other than that of the neighbouring municipality. The data for these localities are not so precise as for the other statistical areas because the enumerators delineate their limits based on locally-recognized boundaries. Population counts will be available for unincorporated places of all sizes. For places with populations of 50 or more, data will be published in a special bulletin (catalogue number 92-771). The population counts of places with less than 50 people will appear only on an unpublished print-out. If an unincorporated place is large enough to comprise one or more enumeration areas, data other than population counts may be available as well.

(3) Geocoding Units

The smallest statistical unit defined by the Geography Section is the block-face to which is assigned a centroid identified by co-ordinates where the data are stored. After describing the co-ordinates of a given area, all the centroids it contains can be determined and a number of data can be retrieved. However, the data are never tabulated for individual block faces and the centroids are, in reality, "building blocks" to define user-specified areas. This new system of building blocks applies to only 14 urban centres in the 1971 Census. For the remainder of Canada, the basic geocoding unit is still the enumeration area.

Conclusion

The present article has tried to present an over-all picture of the geographical and statistical areas used by the census for presenting its data. All the terms mentioned will be defined in the Dictionary of the 1971 Census Terms and will be used for access to information.

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(1) This article is taken from a paper by Dr. F. Ricour-Singh, Geography Section, Census Division, Socio-Economic Statistics Branch, Statistics Canada, Ottawa, K1A 0T7. More information on this topic may be obtained from the Chief of the Geography Section and/or the author.

(2) For further details on the criteria and their application in special cases, refer to the document "Census Metropolitan Areas, Revision of the Delineation, Concepts and Criteria for the 1971 Census", available from Geography Section, Census Division, Statistics Canada, Ottawa, K1A 0T7.

CATALOGUE 11-005 VOLUME 5 / NUMBER 3 / OCTOBER 1972

STATISTICAL OBSERVER

CONTENTS

This is the last issue of the *Statistical Observer*. In future, the kinds of information that have appeared in the *Observer* will be contained in an expanded *Canadian Statistical Review* (catalogue number 11-003) a monthly Statistics Canada publication.

The first issue of the CSR to contain *Statistical Observer* material is planned for release in April 1973. Current subscribers to the *Observer*, who are not already on the CSR mailing list, will receive sample issues of the *Canadian Statistical Review* and then be given an opportunity to become regular subscribers.

STATISTICAL OBSERVER

VOLUME 5 / NUMBER 3 / OCTOBER 1972

The Statistical Observer is designed to contribute toward informing economists, statisticians and related professionals throughout Canada about selected statistical and research developments undertaken in Statistics Canada, in other federal departments and agencies, in provincial departments, in universities and in business and independent research organizations.
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CATALOGUE 11-005

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Update on CANSIM

From December 28 to 30, 1972, members of the Allied Social Sciences Association met in Toronto. At this conference, Statistics Canada presented an exhibit highlighting some of the bureau's activities and publications. One feature of this display was an explanation of CANSIM and a demonstration of how it works. The following article uses some material from the display to bring readers up-to-date on CANSIM (2).

The Canadian Socio-Economic Information Management System (CANSIM) is one of North America's largest data banks. Developed by Statistics Canada, the CANSIM system currently comprises 30,000 economic time series and the supporting software needed to retrieve and manipulate the data. Operation of the system is the responsibility of the bureau's General Time Series Staff.

CANSIM provides for storage of time series in a generalized format. A data entry program creates new files, updates existing files, permits revision and correction of stored data and contains a number of built-in checks to minimize errors being introduced into the base. There is also a housekeeping system which re-sorts files, polices required updating of files, prepares directories of series included, and provides cost-accounting and other information required to operate and administer the system.

The Data Entry subsystem is the only one which has the power to write on the base. The confidentiality passwords in the matrix record include a "data entry security word" without which it is impossible to enter or change information in a matrix. Other confidentiality passwords in the matrix record and in the series record protect information against unauthorized withdrawals. Agencies responsible for the data are notified via the housekeeping system of successful and unsuccessful retrieval requests for their confidential series, and of the passwords used.

An important feature of the data entry program which provides for the retrieval and manipulation of data, and for the printing of full-scale reports from the base is the inclusion of descriptive attributes on each and every data point: date of reference, date of entry, publication attributes (whether the figure is preliminary, estimated, or revised), codes for retrieving footnotes from the matrix record where required, and the security or confidentiality code.

In 1969, when the services of the system were first offered, only the Data Entry and Housekeeping systems were available together with a very limited retrieval capacity. However, a number of changes have been made in CANSIM since then, greatly increasing the range of services available to users.

(1) CANSIM is a registered trade mark of Statistics Canada under the Trade Marks Act, and applies only to the full data base and related specialized programs.

(2) For more details on the CANSIM system, see "Progress Report on CANSIM", by Mary Lennox, Chief, General Time Series Staff, in the November 1972 issue of the Canadian Statistical Review, catalogue number 11-003.

Reference Material

CANSIM also has reference material to tell users what data is available, to give explanations of concepts and to describe how to get information out of the system in the form desired. At present, there are four items of reference material.

(a) The **Summary Reference Index** provides a list of all the matrices in the data base – it is the starting point for locating the series contained in CANSIM.

(b) The **Series Directory** gives detail of the individual series. This includes titles, source, starting dates of series, security level (public or secure), and frequencies. Either the CANSIM identifier on the left side of the page or the DATABANK identifier on the right side of the page may be used in retrieval commands.

(c) An **Inquiries List** identifies Statistics Canada and other agency staff who are prepared to discuss the data (availability, concepts, limitations, etc.)

(d) **CANSIM: Users Manual for Data Retrieval and Manipulation** (catalogue number 12-531, revised, 1972): this manual has been revised to incorporate options and formats available in the new retrieval system.

Retrieval

As mentioned, information can be retrieved from CANSIM in different formats to fill specific needs. The following are the output formats.

DATABANK creates a file which serves as input to the DATABANK and MASSAGER programs. DATABANK is a file maintenance program; MASSAGER is a data manipulative program.

RANDOM creates a randomly accessible file which serves as input to the MASSAGER program with random access feature. This feature allows users to access the series in this interim storage in any order for data manipulation.

UTILITY creates a file on tape or disk which can be used as input to FANTOM, MATOP, X-11 Seasonal Adjustment, GROPE (plotter), and to any such utility program for which the input may be described by a format card.

PUBLICATION creates a file on tape or disk containing data and all information stored in CANSIM for the series retrieved. It is intended for use with report-generating programs for automating publications.

RE-ENTRY – this format produces a card image tape of the requested series which may be used to create a temporary base. Access to the data entry programs of CANSIM is required.

TABLE produces a "working table" print-out with which the user may examine the content and detail of the base. A maximum of seven columns (series) may be produced on one page.

DISPLAY – this format produces a print-out of one series per page and contains all the descriptive detail on the base.

In addition to the standard formats, users may take advantage of some special retrieval options. A syntactical check (or diagnostic edit) of all retrieval command cards may be made prior to retrieval to ensure all required fields are complete and correct.

Also, users now have the option of "accepting errors"; that is, the option of continuing a job although error(s) may be encountered. For example, a series is requested from 1960 to the latest date available but data are available only from 1961. With the "accepting errors" option, the series is retrieved from 1961 and an error message is printed. Without the "accepting errors" option, the job terminates.

Another feature is an "ALL" option, restricted to retrieval using the CANSIM identifier, which allows retrieval of all series in a single matrix or all series in a range of matrices.

There are also options allowing the user to specify the information needed. The time period to be retrieved may be specified. Users may retrieve all the data points available for a time series, some of the data points, or a single data point. The number of data columns (time series) per page can be controlled in TABLE format (up to a maximum of seven). In addition, a "RENAME" option allows the user to change the DATABANK identifier on outputs to a more meaningful name. In TABLE format, the name replaces the column number.

Manipulation

Users can retrieve data for manipulation on a random access device or on tape. Data manipulative capability is provided by four program packages (DATABANK, MASSAGER, MATOP and FANTOM) and the X-11 Seasonal Adjustment programs.

DATABANK, as noted previously, is a file maintenance program. It is designed to store and maintain a large number of economic time series on a single tape. Generally, this restricts the number of series that can be handled efficiently on one tape to about 10,000. The program allows for the addition, depletion and editing of any series. The data can also be listed, indexed and copied onto other tapes. The system is designed to work with any data which is arranged or arrangeable in a time series format.

The MASSAGER program carries out statistical manipulations of data, accepts input from the DATABANK tape, from the CANSIM tape (DATABANK format), or from cards. Retrieved series are arrayed as columns in core storage and, by a sequence of commands, the columns are manipulated as desired. The commands include simple operations on a single series (column) such as square roots, logarithms, etc., and complex operations on several variables or columns such as multiple regressions, plots, etc.

The MATOP program was originally written in Statistics Canada. Other versions have since been developed with added features. It accepts input from tapes from CANSIM, DATABANK tapes, or from cards. The data may be entered in memory as columns, rows or as a matrix. The program carries out mathematical and statistical manipulations of data.

The FANTOM program is a package of pre-coded sub-routines serving basically the same purpose as MATOP. It has been re-written with free form English language commands. Other features have been included which add flexibility. One important simplification is the manner in which the user must reserve core.

Special Features

Since May 1972, CANSIM has been on line at the federal government's Computer Services Bureau enabling its customers (at present, only federal government departments and agencies) direct access to the data base as well as the manipulative programs of the system. There are now nine departments and agencies using this CANSIM service (Economic Council of Canada, Treasury Board, Bank of Canada, the Departments of National Health and Welfare; Industry, Trade and Commerce; the Environment; Finance; Manpower and Immigration; and Energy, Mines and Resources). For the benefit of customers with terminals, the CANSIM NEWS FLASH provides information on the status of series in CANSIM. This file is available on line and can be retrieved daily or less frequently if specified.

To ensure that information released is kept current and correct, data may be frozen against retrieval at either the series or matrix level. This option allows for entry and validation of data prior to release.

Another special feature of the system is the CANSIM-ALPHATEXT interface which can extract data from CANSIM on tape in formats suitable for reports. The interface allows the combination of CANSIM data and ALPHACOMP facilities (a program of Alphatext Systems Ltd.) to produce camera-ready text and tables.

Contents of the Data Base

The CANSIM data base, currently composed of some 30,000 time series, is updated daily to incorporate current and revised data. Historical records date from 1946 where possible. Major blocks of series are included for the *Canadian Statistical Review*, Income and Expenditure Accounts, Balance of Payments, Real Domestic Product, Price Indexes, Labour Statistics and Agriculture.

Services and Costs

Users of the system vary from large computer service bureaus to individual researchers and businessmen. Federal departments and agencies who have access through the government Computer Services Bureau may retrieve all CANSIM data and also may enter data into the system. All other users may request retrieval of all or any series in user-specified order and format. These users send their requests to the General Time Series Staff and receive data either on tape or print-outs. Requests are usually filled within 24 hours.

CANSIM charges non-government users 15 cents per series per

retrieval on print-outs or on customer-supplied tapes. There is a minimum charge of $25 for tapes and $5 for print-outs. For retrieval of more than 1,000 series, customers receive a special rate of computer costs plus fifty per cent.

Customers using CANSIM directly via terminals or over the counter pay the Computer Services Bureau for computer costs plus a CANSIM charge of ten per cent to Statistics Canada.

Another service available to users is the CANSIM public tape – a machine-readable form containing 5,000-6,000 time series. This tape may be purchased monthly for $150. Commercial service agencies are the main purchasers of this tape. *More information about the CANSIM system and how it can work for you is available from T. Tanaka, Head, CANSIM Advisory and Development Group, General Time Series Staff, Statistics Canada, Ottawa K1A 0Z8. (Telephone: 995-7406 Area Code 613).*

Terms of Credit Study

The results of a recent survey of Canadian exporting corporations carried out by Statistics Canada on the original terms of credit extended to foreign buyers of 1970 exports are now available. The survey was carried out by the Financial Statistics Branch, Statistics Canada, at the request of the Export Development Corporation, a federal government Crown Corporation which insures Canadian exporters against the non-payment of goods or services for causes beyond the control of seller and buyer, offers long-term financing on sales of capital goods and guarantees bank loans to foreign buyers on medium-term credit.

In the study, about 1,200 companies were surveyed, representing 10 major industry groups and encompassing 88 per cent of Canada's total exports and re-exports in 1970. Detailed analyses of the patterns of credit, by industry, terms of credit, company affiliation and trading areas were done on the basis of actual returns received from about 1,000 corporations. This high response rate is attributable to the assistance and co-operation of 26 industry associations.

The survey attempts to measure only the terms of credit extended by the exporters themselves. It does not include other long-term financing obtained to facilitate export sales offered by international financial agencies such as the World Bank, or domestically by the Canadian International Development Agency, or financing provided by the financial intermediaries either to buyers or sellers of Canadian goods. To this extent, it is the terms of credit as they affect the Canadian exporters, and not Canada as a whole, which is reflected in the figures.

Credit terms are an essential element in international trade markets, particularly where price, quality, delivery and service differentials are small.

The purpose of the survey was to obtain a national picture of the terms of export trade, to evaluate the importance of credit for specific industries and categories of goods. The statistics will be useful for exporters to compare the amount and length of their export credits with the trend for their own and related industries.

The credit statistics will also be helpful to government financing agencies as a guideline for policy formulation on the extension of credit financing in the medium-term ranges.

The results of the study were published in the October issue of the *Canadian Statistical Review* (catalogue number 11-003). *More information on this study is available from Miss S.M. Gianetto, Research Statistician, Financial Statistics Branch, Statistics Canada, No. 5 Temporary Building, Ottawa K1A 0Z7.*

Science Statistics

As a result of the present interest in science policy and social development, Statistics Canada is supporting a dynamic program of science statistics. This program is being developed by the Science Statistics Group of the Education Division, in close co-operation with the Ministry of State for Science and Technology (MOSST). It has also been greatly influenced by the recent discussions of science policy, in particular the work of the Senate Special Committee on Science Policy.

For many years, biennial surveys have been carried out by Statistics Canada on research and development (R&D) in technology and the natural sciences in the federal government and Canadian industry. These surveys have been greatly improved, both in content and timeliness, and are now carried out annually. In addition to the annual reports, *Federal Government Activities in the Natural Sciences,* catalogue number 13-202, and *Industrial Research and Development Expenditures in Canada,* 13-203, a number of computer tabulations of the data collected are available on request. Lately, the range of statistics has been broadened to include the human sciences – social sciences and humanities. A successful experimental survey was carried out in 1971 and the first annual report has recently been published as *Federal Government Activities in the Human Sciences,* catalogue number 13-205.

Science statistics are one of the development areas in Statistics Canada. After a very slow start in 1956, a comprehensive statistical program is being rapidly implemented. As the result of a recent re-organization, the Science Statistics Group of the Education Division has been divided into two sections: the Science Surveys Section and the Science Studies Section. At present, the emphasis is on surveys designed to provide the data required now for science policy and the administration of government science programs. Three units have therefore been set up in the Science Surveys Section – one for Canadian governments, one for universities and one for the industrial sector. A regular survey program exists for the federal government and industry, and estimating procedures are being developed for the universities and provincial governments. Within a very few years, it is expected that a statistical description of most Canadian scientific activities will be available.

To provide a complete statistical picture of R&D in Canada, data are required on the work carried out in the university sector. The unit recently formed in the Surveys Section is developing the appropriate series. This unit will not approach the universities until all the available relevant data have been examined and evaluated; for example, records of granting agencies, annual reports of universities, project records at the Information Exchange Centre for federally funded university research, etc. It is hoped that satisfactory interim estimates of broad categories of university R&D can be made from such sources. Surveys, when necessary to supply more detailed information, will be co-ordinated so far as possible with programs of MOSST, other government departments, the Association of Universities and Colleges of Canada and the individual universities.

The Science Studies Section, although really a paper section at the moment, offers exciting possibilities for the future. One unit is envisaged as a "customer" unit, actively helping other departments plan and develop their information programs on R&D and other scientific activities. Another will be concerned with the study and measurement of social innovations; that is, substantial changes in the organization, structure and functioning of society resulting from the planned implementation of policies suggested by scientific research. The forthcoming third volume of the report of the Senate Special Committee on Science Policy will undoubtedly greatly influence the studies to be carried out in this area.

The third unit in the Science Studies Section will study the process of technological innovation – the transformation of a scientifically developed product or process into a new or improved marketable product or operational process. The need for Canadian studies of industrial innovation was noted by the Senate Special Committee in its second volume. A small start has been made with an experimental survey of 100 firms in 1971. The topic is one of considerable interest to many firms and another survey will be carried out in 1973. All work on technological innovation is now being carried out as an extension of regular surveys of industrial R&D. In addition, an important analysis program is also being planned to study innovation. As a result of this latter program, more use will be made of data already collected – individual data which, because of the secrecy imposed by the Statistics Act, are generally unavailable to outside researchers. *More information on this topic is available from the senior members of the Science Statistics Group – Humphrey Stead, Chief; Florent Gagné, university R&D; and Mary Murphy, federal government surveys. Their address is Education Division, Statistics Canada, No 5 Temporary Building, Ottawa, K1A 0Z5.*

CONFERENCES

Census of Agriculture Workshops

The first users' workshop on the 1971 Census of Agriculture data was held in Ottawa, October 3, 1972. This meeting was followed by a series of these workshops, held across Canada, to inform users of the kinds of data and the various tabulations and cross-classifications available from last June's farm census. The following report pertains to the meeting held in Ottawa but the same pattern applied to the workshops in each region as well.

The Ottawa workshop was opened by the Chairman, Bob Ellis, Assistant Director, Census Division, who discussed the advantages and shortcomings of the drop-off – pick-up method of enumeration used for the first time in the 1971 Census of Agriculture. He also outlined some of the changes in definitions and concepts used and gave examples of the new types of data available. Mr. Ellis then discussed briefly the Post Census Agricultural Survey, a sample survey of 15,000 farms conducted last July as both a quality check on 1971 Census data and to obtain additional information. The editing, tabulating, and aggregating procedures used to prepare Census results were outlined for the users of agricultural data present at the meeting.

A progress report on the release of Census of Agriculture data was given, indicating that most of the reports in the advance series concerning agricultural data had been released. Reference was also made to the 1971 Census Catalogue.

The next speaker, R. Brzezinski of the Agriculture Subdivision, Census Division, described the purpose of the Agriculture Data Directory and gave examples of how to use it. This book classifies the data collected in the 1971 Census of Agriculture to facilitate access by users. The Directory provides definitions of terms, a list of the types and cross-classifications of the data and the geographic base on which these are available. It also indicates the form in which data will be available – in publications, on microfilm, or on computer summary tapes.

The next topic discussed at the Ottawa workshop was the Agriculture Enumerative Sample Survey of 1972. Mr. R.H. Campbell of the Statistics Canada Agriculture Division explained that the previous survey system of mailed questionnaires for agricultural statistics no longer fully met the present needs of either the intermediate or final users of the data. The system also did not allow the provision of statistical measures of reliability for the data collected; nor could it provide, on a regular annual basis, such estimates as farm numbers, farm size, income distribution or farm classification by type of enterprise.

The new enumerative survey could provide these important items and thereby help fill the needs of both the agricultural and government sectors for more accurate and timely information. The sample used in 1972 consists of 6,000 farms, including 500 large-scale farms, based on the sample used for the 1971 Post Census Agricultural Survey. It is expected the size will be expanded by 2,000 to 3,000 farms in 1973. After Mr. Campbell's presentation, the audience commented on his remarks and asked questions on the survey.

Mr. Ellis then outlined the Census Division's plans for the 1976 Census of Agriculture, which will be smaller in scope than the decennial census. The purpose of a quinquennial census is to provide benchmarks for current crop and livestock surveys, to provide data for small geographical areas and to update the central registry of farms. The 1976 Census of Agriculture will use the drop-off – pick-up method of questionnaire distribution, as was done in 1971. The kinds of data to be obtained from the 1976 Census will be limited but will include information on tenure, farm capital, field crop acreages, land use, livestock numbers, off-farm work, hired labor, economic classification, and type of organization.

The afternoon session of the workshop was devoted to a paper by Dr. J.F. Scott of the Agriculture Subdivision, Census Division. Dr. Scott presented information on how the 1971 Census of Agriculture is being linked with the Housing and Population Census to produce socio-economic data relating to farm operators and their households. He also explained the significance of this operation in terms of the increased cross-classifications of data that will be available and the increased number of variables that can be produced.

Participants at the workshops included more than 250 representatives of federal and provincial government departments and agencies, as well as agribusiness, farm organizations and universities.

More information about these workshops may be obtained from Mr. R. Brzezinski, Agriculture Subdivision, Census Division, Statistics Canada, Ottawa, K1A 0T6.

NEW REPORTS

Provincial Economics Bulletins

A recent Alberta report, *1971 Annual Review of Business Conditions,* uses charts, tables and text to describe all sectors of Alberta's economy. The publication is available from the Department of Industry and Commerce, Government of Alberta, Edmonton.

The 1972 *Saskatchewan Economic Review* combines narrative commentary with statistical tables and charts to highlight the most significant data in the report. Information on population, labour force, economic and business indicators, manufacturing and agriculture is presented for selected years from 1901 to 1971. The report is available from the Planning and Research Executive Council, Rm. 123, Legislative Building, Regina, Saskatchewan.

The 1971 issue of the *Ontario Statistical Review,* an annual reference publication supplementing the *Ontario Economic Review,* was released in July 1972. The objectives of this report are to provide historical perspective for the economic indicators in the OER and to bring together a wide range of information relating to the Ontario economy.

In addition to economic indicators and statistics for the province as a whole, there are data on various regions of Ontario including three basic tables of the input-output model for the Niagara Region.

Copies of the *Ontario Statistical Review* may be obtained from the Economic Analysis Branch, Office for Economic Policy, Ministry of Treasury, Economics and Intergovernmental Affairs, Queens Park, Toronto, Ontario.

The NB office of the Economic Advisor has released *New Brunswick Economic Statistics,* a 36-page report on the economic conditions of that province. The report contains an analytical description of New Brunswick's economy during the period from 1969 to mid-1972. A comprehensive set of tables on all aspects of New Brunswick is included. Copies of the report are available from the Office of the Economic Advisor, New Brunswick Government, Fredericton, New Brunswick.

ANNOUNCEMENTS

Dr. S. Goldberg, New Director, U.N. Statistical Commission

Dr. Simon A. Goldberg, former Assistant Chief Statistician of Canada, has been appointed Director of the Statistical Office of the United Nations Department of Economic and Social Affairs, effective November 1, 1972.

The United Nations Statistical Office is the focal point of world-wide statistical activities including the development of statistical standards. It helps developing countries build stronger statistical systems, and provides all countries with a basis for higher quality and comparable information. The U.N. Statistical Office gave the world the first comprehensive data on per capita national income for countries; the first set of comparable indexes of industrial production for the world, and for market and centrally controlled economies; and the method of converting figures on GNP for goods and services of capitalist and communist countries.

Dr. Goldberg studied economics and political science at McGill University in Montreal where he received his B.A. and M.A. degrees. In continued studies in economics at Harvard University, he earned A.M. and Ph. D. degrees.

After service with the Royal Canadian Air Force from 1942 to 1945, Dr. Goldberg joined Statistics Canada. He became a leading member of a small group that developed and constructed Canada's national income and expenditure accounts and, over the years, he has played a central role in the evolution of Statistics Canada as a statistical organization. In 1950, he was appointed Director of Research and Development and was responsible for development and publication of input-output studies, estimates of income distribution, indexes of production and productivity, national financial flows, and a variety of other statistical studies. Subsequently, Dr. Goldberg was appointed Assistant Chief Statistician for Integration and Development. In this capacity, he has been responsible for the evolution of a progressively integrated and improved national system of social and economic statistics and overall research, development and planning.

Dr. Goldberg is a member of the Executive Council of the International Association for Research on Income and Wealth, and served as its chairman from 1969 to 1971. He is also a member of the International Statistical Institute, the Inter-American Statistical Institute, and the Conference on Research on Income and Wealth of the National Bureau of Economic Research of the United States. He is a Fellow of the American Statistical Association and has served as alternate Canadian delegate to the United Nations Statistical Commission and as a delegate to the Conference of Commonwealth Statisticians. He is author of numerous published papers and studies on a variety of statistical subjects.

Dr. Goldberg's professional expertise in economics and statistics as well as his imaginative planning and innovative

management abilities have contributed greatly to the development of Statistics Canada and ensure an equally valuable contribution to the United Nations.

Re-organization Within the Financial Statistics Branch

Effective July 31, 1972, the Industrial Corporations Section, with G. Nazar as Chief, and the Financial Institutions Section, with R.R. Rotor as Chief, were transferred from the Business Finance Division of the Financial Statistics Branch to the CALURA Division of the same branch.

These two sections are responsible for the quarterly financial statistics of industrial corporations and of financial institutions. This organizational change makes easier the integration of the work of these two sections and thereby facilitates analysis of the quarterly surveys and the annual series compiled from corporation income tax returns.

Publications relating to financial statistics published by CALURA now include the following:

Financial Institutions (61-006) – Income and balance sheet data for trust companies, mortgage loan companies, sales finance companies and other selected financial institutions. Quarterly. Bilingual.

Industrial Corporations (61-003) – Income and balance sheet data for most non-financial corporations. Quarterly. Bilingual.

Corporation Financial Statistics (61-207) – Balance sheet and income data, by detailed industry group, derived from the tabulation of corporation income tax returns. Annual. Bilingual.

Corporation Taxation Statistics (61-208) – Provincial distribution of income, and a reconciliation of book and taxation profits, derived from the tabulation of corporation income tax returns. Annual. Bilingual.

Credit Unions (61-209) – Income and balance sheet data, by province. Annual. Bilingual.

Cheques Cashed in Clearing Centres (61-001) – Monthly and Annual.

Commercial Failures (61-002) – Quarterly.

Survey Statisticians

The International Statistical Institute approved the formation of a new Association, the International Association of Survey Statisticians, at its 38th Session, August 1971. The Association will be affiliated with the Institute and function as one of its associations, but membership in the Association is not restricted to members of the I.S.I.

The objectives of the Association are to promote the study and development of the theory and practice of statistical censuses and surveys and associated subjects, and to foster interest in these subjects. These objectives may be furthered through the organization of meetings, seminars, conferences, research or training programs, publications, etc.

An organizing committee has prepared the draft statutes of the Association. This committee, under the Chairmanship of I.P. Fellegi, Director General, Methodology and Systems Branch, Statistics Canada, included as its members: Messrs. J.P.M.R. Desabie (France), L. Kish (U.S.A.), M.N. Murthy (India), M.R. Sampford (U.K.) and Z.Z. Zarkovich (Yugoslavia).

The first formal activity of the Association will be to organize some sessions as part of the regular program of the next meeting of the International Statistical Institute in Vienna, August 1973, and some additional sessions directly preceding, succeeding or concurrent with the regular I.S.I. program. Persons who have suggestions for topics to be discussed by the new Association during its first meetings, or who would like to present a contributed paper should contact the chairman of the organizing committee, I.P. Fellegi, Statistics Canada, Ottawa, Canada.

Appointments

John Bougie has been named Assistant Director (Census) of the Field Division. During a transition period, Mr. Bougie will continue to act as Regional Director for the Statistics Canada Ottawa Regional Office as well as taking on the responsibilities of the Assistant Director position.

Yvon Goulet has become Assistant Director of the Merchandising and Services Division, where he will be responsible for the co-ordination of the monthly and annual statistical programs of the Division. Mr. Goulet was formerly Director, Technical and Commercial Systems Design and Implementation, Société de Mathématiques Appliquées Inc. of Montreal.

J.B. Swayne is the new Assistant Director of the Central Planning Staff. Mr. Swayne has served with the Departments of Industry, Trade and Commerce; Consumer and Corporate Affairs; and most recently with the Program Branch of Treasury Board.

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